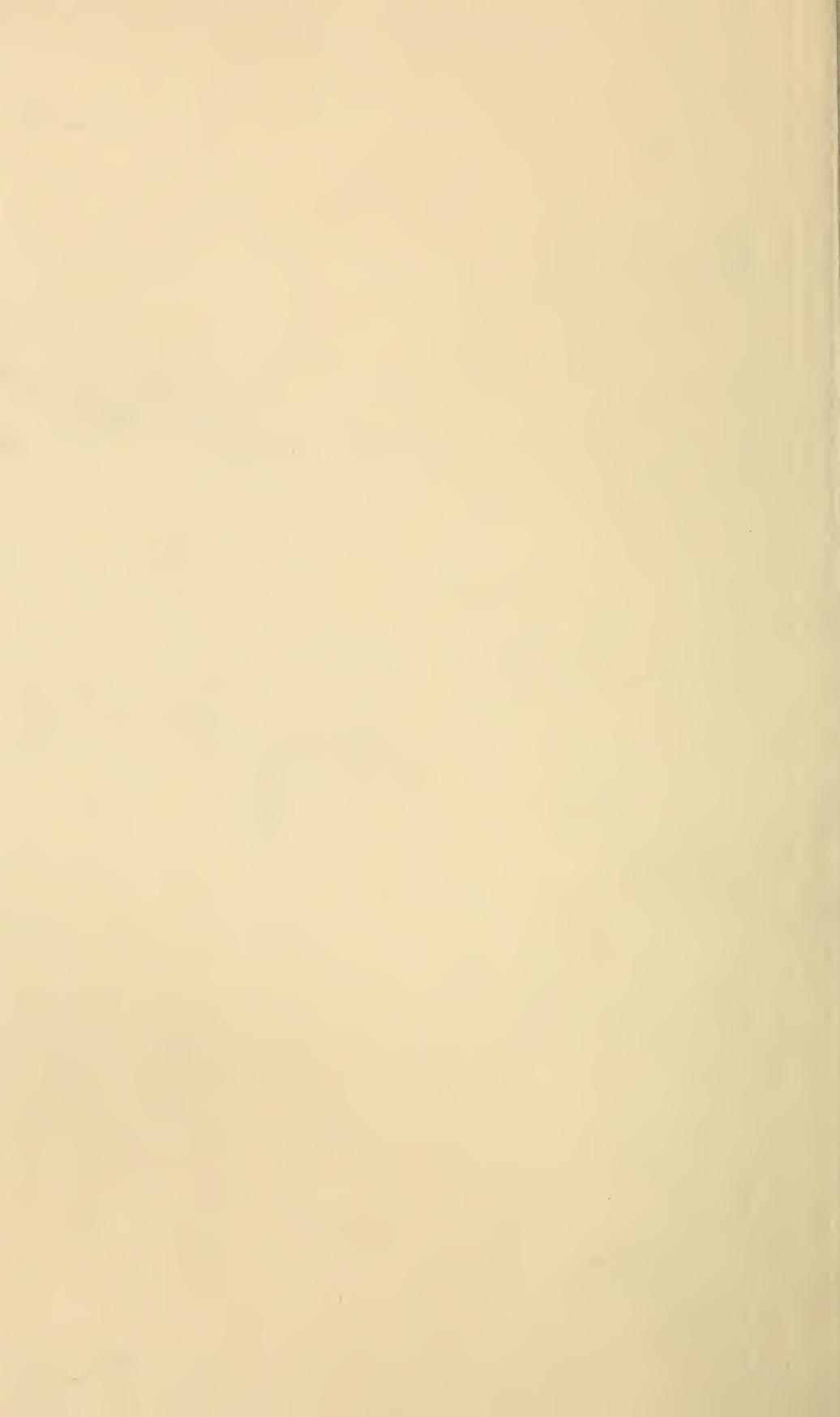


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GLEANINGS *U.S.*
A JOURNAL
DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS.

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FRANK BENTON is quoted in *Australian Bee Bulletin* as saying that the product of *Apis dorsata* most desired is not honey but wax, and that the Philippines export annually 10 to 20 tons of wax.

A. ALFONSUS, Vienna, is making a new foundation. Instead of being smooth, the edges of the walls are notched and waving in imitation of nature. As with the Given, bees accept this more readily.

EDWIN BEVINS wants to know if the aguinaldo-tree mentioned by Harry Howe resembles in any or many respects the Philippine product that has been worrying Uncle Sam. Friend Bevins, I don't know.

"HONEY after candying, being warmed to liquefy, will not candy again," says *Australian Bee Bulletin*. But it will this side the globe, although sometimes keeping it in a hot place for a long time prevents candying.

ANSWERING Mrs. Bennett, p. 310, roaches troubled my bees while I used quilts which gave them a shelter where bees could not get at them; but with plain board covers and no place a bee can not follow a roach, not a roach can be found.

OH! CAN IT BE that "flies are flies because they fly"?

Oh! can it be that "fleas are fleas because they flee"?

Oh! can it be that "bees are bees because they be"?—A. E. W., in *American Bee Journal*.

AFTER READING Dr. Howard's article, p. 298, one is tempted to ask, "Can we get any more for our honey by learning to say, 'Bacillus-aerobic-milius-arthro-endosporous'?" However that may be, it's a good deal more comfortable to be somewhat informed in advance about such things, instead of being thrown into a panic when something seems to go wrong in a hive. Thanks, doctor, for your very instructive article.

A WORD of caution may not be amiss about pelargoniums. Friend Root says, p. 321, they are persistent bloomers. The fact is, that most varieties are annual bloomers, a perfect mass of bloom for two or three months, beginning March or April, then flowerless the rest of the year. Lady Washington geranium is the common name popularly applied to all pelargoniums.

C. H. CLAYTON has evidently been doing some thinking; but when he says, p. 296, "No combination will ever be able to maintain abnormal prices," one wonders whether he forgets the Standard Oil Co. [But the Standard Oil Co. does not have things *all* its own way, notwithstanding it probably does have more influence than any other agency or concern in advancing prices.—ED.]

DO GREASY SECTIONS and very ripe heavy honey invariably go together? Friend Whitney thinks they do, p. 310. I think it has been rather the other way in my observation. [Here is a case where there is some evident confusion. Mr. Whitney is probably speaking about one kind of greasy section and you another. In an editorial elsewhere I have attempted to describe the various kinds of discolored sections.—ED.]

UNCLE LISHA seems to half hint, p. 306, that all breeders but bee-breeders had been working to improve their stock. Bless your heart, Uncle L., you're behind the times. Talk about your improved sheep, hog, or cows! Just trot out a single one of them that has been bred up to the beautiful golden color we have in our bees. And here you are, grumbling as if tons of honey instead of beauty was the thing to work for!

AFTER THIRTY YEARS of no-license, the argument that liquor would be used anyhow, and we might as well have the license money in Marengo, prevailed. It took less than two years to prove what an awful mistake that was (I use the word *awful* advisedly), and this week each of the three wards went no-license. I've had a feeling of disgrace on me for the past two years, and now I'm very happy. Thanks, Ernest, for the help you were willing to give us when here. [See editorial elsewhere.—ED.]

CHALON FOWLS, I don't dispute that for you and other people in the East it may be best to keep your honey liquid; but there's one State in the East that's an exception—I mean Ohio. I knew a man in that State who succeeded—"grandly succeeded"—in educating his customers to prefer candied honey, and he sold more honey than any other man in the State, for good prices too. Could not some other Ohio man do what C. F. Muth did? [That's right, doctor—give it to him—I mean Fowls. He and I tried to argue it out in our office the other day.—ED.]

STENOG clearly has the joke on me. I've studied up all sorts of ways to explain or wiggle out of saying "foul-broody *hives*," but there it is twice in plain print, p. 293. I might say that the disease may be conveyed by the hives, so it's all right to speak of "foul-broody hives," but the uncomfortable fact remains that when I wrote *hives* I meant colonies. But you see if I don't get even with you, Stenog.—[As hives themselves may contain germs of disease, it seems to me your use of the words "foul-broody *hives*" was entirely proper—at least I meant no criticism thereon.—ST.]

THAT EDITORIAL, p. 311, sounds as if every bee-keeper ought to join the U. S. B. K. A. There's no need of that. If others join and go ahead with the work, I can have the benefit of what they do, and save my dollar. See? [It would appear as if some good men did see it that way; but I am sure they do not, and I rather think it is a matter of neglect. They believe that the Association is a good thing, and is doing a good work, and they intend to join it; but when they have a dollar handy they do not feel like writing; and when they do feel like writing they do not have the dollar, and there it is.—ED.]

BRO. A. I. Root, in that Home talk, p. 314 (and between you and me it's a fine talk), you say, "I think I am really disturbed more just now than I ever have been before in my life, in regard to the state of affairs, not only in our own nation, but in all nations." I never was more encouraged, and largely because good men like you are disturbed, and beginning to say they will no longer be "like dumb, driven cattle," bamboozled into saying that every thing the bosses say and do is just right. Doubtful if there ever was a time before when there were as many scared men at Washington for fear they would be called to account at home for favoring wrong measures.

DEVAUCHELLE strongly maintains, in *"Apiculteur"*, that the best way to get good returns in a poor locality is to have large brood-chambers and strong colonies; and now comes our good friend of smoker fame, p. 298, and teaches just the reverse. I sometimes wonder whether there's any thing we know, and know for certain, about bees. [Are you sure, doctor, that our friend Bingham is really an advocate of small brood-chambers? His hive is named the Expansive; and does not that imply that it can be made to accommodate large colonies, because, if he is a believer in small brood-chambers, why need he have an expan-

sive hive? Have not the advocates of the divisible or shallow-brood-chamber hives said that such hives were adapted to any locality or to any bee-keeper because large or small colonies could be made as circumstances seemed to demand?—ED.]

AGAIN I want to call attention to the fact that in discussing greasy sections we are sometimes talking about two different things. A greasy appearance on the outside of the cappings caused by a deposit thereon, and possibly a difference in the cappings themselves, is an utterly different thing from sections that have the honey filled up against the cappings with no air-space. The whitest cappers in the world may have the first kind under certain conditions, and, indeed, under any condition if sections are left on long enough, the inside sections being first darkened as mentioned by J. T. Siler, and the queen was not at all responsible in his case. But when you find the greasy appearance due to the absence of air space, outside conditions seem to have nothing to do with the case. That Punic colony is by no means the only colony I've had that would make greasy (more properly watery) sections right through the entire season when other colonies capped white. [I will explain to our readers that Dr. Miller and I talked over this matter of discolored sections when I visited him at his home two or three weeks ago. After gathering a few more facts I prepared a statement of the various kinds of soiled boxes, including the greasy, the pollen-stained, the propolis-stained, travel-stained, and every kind of soiled section. There has been such a diversity of opinion that it is very evident we each and all have been talking about different things, when we thought we were talking about one and the same thing. If I have not fully described and named all the different classes, I hope our readers will correct me.—ED.]



May-day! hooray! all's gay!
Bees are buzzing, birds are singing,
Music through the woods is ringing,
Bells on frisky sheep are clinking—
Let us to the fields away.

AMERICAN BEE JOURNAL.

Under the head, "Fool Writers Still Lying," Mr. York gives the following as a sample of what he seems to consider the foolishness and adroitness at lying on the part of the New York *Mail and Express*. It is a sample brick of several more items just like it, from the same source:

I know a man who keeps 50 hives of bees on the roof of his store in the city, and by hustling up plenty of glucose he gets enough "honey" out of the buzzing slaves to do a wholesale business in honey. Why, his bees never saw a flower, and would shy at a honeysuckle if they happened to come near one. He will not even let the poor things have a recess to get a

drink of water, but keeps a pan of fresh water near the hives for them to drink.

In commenting on this Mr. York makes the following caustic reply which I most cordially indorse :

How any self-respecting newspaper can deliberately publish such falsehoods as are contained in the clipping above is more than we can understand. But ten chances to one, should we undertake to show to the editor of the New York Mail and Express that one of his reporters had been writing what he (the reporter) knew was only a bunch of lies, that editor would only laugh and call it a fine joke.

The awful degeneracy of the modern daily newspapers is something sad to contemplate. They care not for truth or honor, nor the reputations of men or business interests. We know of nothing else that is so much needed, and of which there seems to be such a limited supply, as honest men—absolutely honest and incorruptible.

That is all true. They live on sensational carriion, and their managers as a class know no more about rural matters than what they can see as they go up and down their elevator-shafts. If they were, under any circumstances, capable of correcting a mistake, the case would be more hopeful; but "What I have written, I have written," is their unchanging law. They are now circulating the claim that exports to the Philippines and Cuba, in the shape of liquors, have fallen from a great figure to practically nothing since our occupancy of those places, and the government figures really make it seem true; but they do not tell the reader that "exports" means only what is sent there from countries outside of this; that is, what we send is not an exportation, as it goes to our own people. The plain figure of what is sent from the United States to Cuba and Manila is artfully concealed under the word "importation." The latter is about 1000 times greater than the average for ten years preceding the Spanish war.

CANADIAN BEE JOURNAL.

The following notice regarding the spraying of fruit-trees was published in connection with the bulletin issued by the Ontario Department of Apiculture, March, 1899 :

Do not spray trees when in full bloom. 1. It is not the right time to spray. 2. It may destroy insects that are then fertilizing the blossoms. 3. It is destructive to the bees. 4. It is forbidden by law.

BRITISH BEE JOURNAL.

A correspondent received a visit from a missionary from China, and from him learned the following :

In China, when a bee-keeper either builds his house himself or gets it built, provision is made in his house for the bees by providing cavities in the brick-work forming the sides of the house. These recesses are about 3 feet from the ground, and of about 2 feet by 1 foot internal dimensions, the open front being closed afterward with a piece of wicker-work plastered over with mud, save a tiny hole left as an entrance for the bees to pass in and out of their strange abode. By this arrangement John Chinaman is not troubled in getting his hives overturned without his knowledge by some stray cow whilst he is asleep, through the garden gate being left ajar overnight; neither is he troubled with the rain wetting the quilts, etc., through a leaky hive-roof.

A fine view of the apiary of Mr. H. Rowell, of Hook, Winchfield, Hants, is given. Mr. R. sells about 1600 lbs. of honey a year, and

that without advertising. He claims to have an attractive article in the first place. His wife glazes the sections. He sometimes sells as much as \$20 worth at shows. His little daughter, Dolly, twelve years old, one of the real queens of England, assists him, and can hive swarms, transfer frames of bees, move a stock from one hive to another, and put on supers. Last August she assisted Mr. Bellairs, secretary of the Hants B. K. A., at a lecture in Basingstroke, by driving a colony of bees from a skep into a hive. It was the first time in the experience of Mr. B. when he was assisted by one so young.

AUSTRALIAN BEE BULLETIN.

The bee-keepers of Australia are making an effort to send a large quantity of honey to the British troops in South Africa. Mr. H. L. Jones has offered 500 lbs. The offer has been gladly accepted by the military authorities. Cape Town, Africa, is exactly west of Adelaide, Aus., a distance of about 5760 miles.

In speaking of American money, Mr. Garrison says : "How handy that decimal coinage for reckoning up cash!—2500 lbs. of honey at 10 cents; add a cipher—25,000; point off two naughts and add the dollar sign—\$250.00—and there you are. Two hundred and fifty dollars and no cents. Yes, we would be content with the sum without any odd cents." All very true; but it's beyond the comprehension of the average American, as yet, to see how weights, lines, and areas, may be divided by the decimal system in the same way a dollar is. The chief difficulty in the way of its adoption, as in reformed spelling, is the fact that something else already occupies the ground. In the case cited, it would be better to cross off the right-hand figure of 2500 at once, and that would show the number of dollars. The same correspondent, in speaking of honey from sugar cane, says, "The poorest treacle was a king to it."



A solar wax-extractor with bottom heat is not a new thing in California. Mr. E. H. Schaeffle has devised and uses an extractor that uses solar heat on the bottom through reflection.

A sure way to stop robbing. To stop a mild case, throw a handful of coarse grass before the entrance; for a more severe case, saturate the grass with water; for a very bad case, saturate the grass with kerosene oil.

James A. Boyd, of Tipton, Tulare Co., has received good returns from his 40-acre home the past year. He has 11 acres in peaches, 7 of which are in Albertas and Muirs and 4 in clingings. From these 11 acres Mr. Boyd sold \$2600 worth of dried peaches. From five acres of vineyard he sold \$977 worth of raisins. The remainder of the 40 acres, which is not occupied by farm

buildings, etc., is devoted to alfalfa. He sold three calves for \$60, and \$130 worth of hogs, besides \$200 worth of honey. Total, \$3967. No account has been kept of the money received by Mrs. Boyd from poultry, eggs, etc., but the above figures show a pretty good income from 40 acres.

The foregoing will show what can be done on a 40-acre ranch planted to fruit and bees. The above is only a type of many. There are but few vacant houses in this locality; no persons out of employment; no tramps, no bed-bugs; fleas scarce, and general prosperity.

A bee-keeper in the South writes me: "Is there a chance for more apiaries in your vicinity?"

Reply.—It is 12 miles from Reedley to Traver. Within that 12 miles are now over 1200 colonies of bees. That's about the size of the chance.

Rather peculiar, Bro. Root, that this young State, and sometimes considered wild and woolly, is ahead of the staid old Ohio in temperance work. Here the voters have the power to establish sanitary districts, and that means the exclusion of the saloon. Several districts have been recently formed in this vicinity. The following quotation from a local paper will show you the way they do it:

A noticeable feature of the election was the great number of ladies in attendance. Almost every voter was accompanied by his wife. And the ladies came prepared with all the good things to eat imaginable. Dinner was served free to every one under the big tent which E. S. Philips, the Atla merchant, had furnished them for the occasion, and no one went away hungry. The presence of so many women and children on the grounds gave Atla the appearance more of being a picnic ground than of a voting-place.

With the heavy vote cast for the formation of sanitary districts, including the votes of many men who either tipple or are hard drinkers, it proved that those who patronize the retail saloons will vote to down them when given an opportunity.

Page 219, bees on shares. So far as my observation and experience go in this State, the owner of bees does not allow the party of the second part to have any of the increase. The plan usually followed, and one that seems to be the most satisfactory to all concerned, is for the owner to furnish the bees, hives for increase, and receptacles for his share of the honey. The party of the second part has half of the honey and wax; provides receptacles for his portion of the honey, and leaves enough honey in the hives at the close of the season for the sustenance of the bees. As both parties are after the most profit possible in the amount of honey, it is for the interest of both parties to prevent swarming as far as possible; and where the extractor is used the swarms are few. The equal division of the products is easily accomplished, and there is seldom disagreement. If Mr. Coney will come over to Reedley, Fresno Co., he can see just how Mr. McCubbin and I are doing it.

Central California has a flourishing association for the marketing of their product. They have started in right, and in line with Arizona and Colorado—no salaried manager and other useless expenses. The sales are made at a minimum expense to the producer.

From the foregoing Echoes the reader will notice that I am one of those bee-keepers who have migrated to Central California, and have

just enjoyed an old-fashioned thunder-shower. About an inch of rain fell in half an hour. It is putting in its best licks in this locality to make up for lost time. I hope the same conditions of moisture extend to the brethren south of the Tehachapi Mountains.



THE CANDYING OF HONEY.

Candied Honey Recommended; a Possible Explanation of the Fact that One Jar of Honey will Candy, and Another Not, Both from the Same Lot; How to Hasten Granulation.

BY S. T. PETTIT.

Mr. Root:—At the Colorado State Convention, page 117, *American Bee Journal*, you say: "Bee-journals have not done their duty in recommending the sale of candied honey." That may be true; but I blame bee-keepers more than the journals. I have always advocated selling in the candied form, and also exhibiting largely in that form. Much good can be done in that line at expositions. I am glad to see the tide rising. Let us talk it up everywhere.

At the same convention Mr. H. Rauchfuss said: "I sold some honey in a can that was poured into jars. One jar remained liquid, and the rest is solid." A quarter of a century ago I had the same experience. The grocer wanted an explanation, and I was troubled. But now I think the explanation not difficult. The specific gravity of dextrose is greater than that of levulose; hence the former gradually drops below the latter; and the greener or thinner the honey, the more rapid the process. In filling the jars the thin levulose would first flow out. In filling, drawing off through a gate, very largely the same thing occurs. Even in well-ripened honey, though to a less degree, the dextrose, in warm weather, gradually moves toward the bottom. Levulose granulates exceedingly slowly, if at all.

The above facts may serve to explain why one jar poured or drawn from the same container may remain liquid while the others from the same container granulate readily. All honey should be well ripened by the bees; and, before being filled into small containers, it should be well stirred and mixed from bottom to top; then the samples will be uniform, and each contain its proper proportion of the ingredients of honey; neglect in this regard is the cause of much lopsided honey on the markets.

Then, again, you are reported as saying: "The fact that the honey is solid is absolute evidence that it is pure." May I suggest that that is a dangerous thing to say, for I know you are quite mis'aken; but fearing harm would result from giving the process of adul-

teration, and the product becoming solid, I think best to withhold it.

With regard to the matter of hurrying up the process of granulating honey, the surest way and the cheapest that I know of is to leave the combs smeared with honey at the last extracting. Tipping the honey several times a day, just a little, will hasten granulation. This can be done cheaply on a large scale. I don't like stirring to hasten granulation. Too much air becomes incorporated, which will greatly injure the honey if kept over until warm weather. Honey will granulate more rapidly if placed in a building with thin walls, so that it will be affected by the change of temperature every day and night.

Before the process of stirring and filling honey into small containers, it should be pretty well warmed up; then it will mix easily and well, and the honey will run quickly, and much more can be done in a given time; and, more, the air will rise to the top, and thus ensure the keeping qualities. These points are all well worth putting into practice.

Aylmer West, Ont., Can., Feb. 27.

[This matter of why honey in one bottle will candy, and not in another, both from the same lot, was discussed considerably at the Colorado convention. I believe you have offered a very reasonable explanation.—ED.]

ASPINWALL'S COMB-HONEY SUPER.

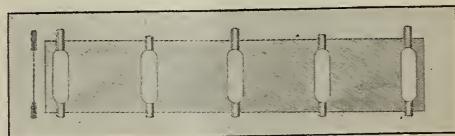
The Advantages of Tin Separators with Transverse Slots for Plain Sections.

BY L. A. ASPINWALL.

Mr. E. R. Root.—Previous to the past season my supers consisted simply of clamping sides and tin separators having transverse or vertical slots, which, with plain sections, were held together with bolts. These supers, being elastic as to width, were adapted to my non-swarming hive. According to the requirements of the colony they averaged about 32 sections, although many of them contained an additional row, making 36 in all. But a gradual enlargement of my hives necessitated larger supers, hence the adoption of section-holders. My principal object in using them was to give added strength or support for the sections. The clamping of 36 sections together without the additional support of holders or a case, as in the T super, is entirely satisfactory unless a larger number is required. It works splendidly with 24 or 28 sections.

With hives of my present construction, I use supers having a capacity for 48 sections. I find, with average seasons, tiering is not wholly satisfactory, the wide supers giving far better results. This applies especially to hives of my construction.

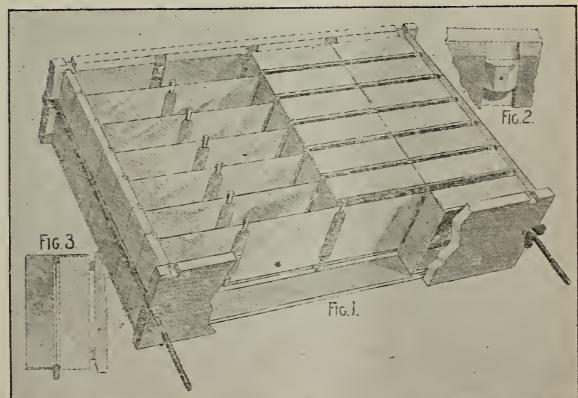
Having stated my reasons for adopting the section holders, I herewith furnish a description of the super complete. Fig. 1 is a perspective showing a 28-section capacity, having one side partly cut away. Of course, readers of GLEANINGS know my partiality for plain sections, hence they are shown in the illustration. The super sides and separators both have transverse or vertical passageways, which enable the bees to pass from section to section longitudinally. This is according to nature.



ASPINWALL'S SEPARATOR FOR PLAIN SECTIONS.

Fig. 2 shows one of two projections which are made in each of the transverse passageways of the super sides. These serve to hold the sections a bee-space from the sides, as also do the metal projections at each end of the vertical openings in the tin separators, as shown in the separate illustration. The alternate openings have longer projections on the lower side, which are supports maintaining the requisite height when filling the super (which should be done on a level bench or table), also to maintain the position of sections right with the holders.

Fig. 3 shows an end view of sections, separator, and side, as held by the projections. The tins are sufficiently long to be clamped between the ends of the section-holders, which gives great rigidity after being bolted together. It may not be amiss to state that the holder ends are $\frac{3}{4}$ inch thick, which strengthens



ASPINWALL'S SLOTTED TIN SEPARATOR SUPER FOR PLAIN SECTIONS.

and prevents the bottoms from sagging with the sections. The long metal projections also aid in this respect.

The reader will notice the upper and lower

edge of each super side is beveled, affording beeways equal in width to those throughout the super. Notches are cut in each end of the super sides to admit a slat when tiering. The two sides enable tiering without the usual danger of crushing bees.

Speaking of separators with transverse or vertical openings, I must still express my admiration for them. As already stated, they are in accordance with nature, and aid in securing well-filled sections.

The past season having been very unfavorable to the storage of honey, and while more than the usual number of unfinished sections have been reported, I have never had a smaller proportion. The best was from a super of 28 sections having 13 well filled, and the foundation not even drawn out in the adjoining ones, all having full sheets.

Jackson, Mich., Feb. 7.

[This is the Mr. Aspinwall who has used plain sections for some eight or nine years, and who has the reputation of producing some of the nicest comb honey ever seen. Even his second-grade lots of sections are better filled out than the average beeway sections on the market.

Recently I learned that he had made some improvements in his comb-honey super, and accordingly requested him to send us a sample super that I might show it to our readers. This he sent, and the engraving of it is here shown.

I think there is no question but this transverse slotted separator, one that he seems to have originated, with beeway projections, will produce as fine honey as can be found anywhere; but it has one quite serious objection—expense. Such separators would cost the average bee-keeper somewhere about 5 cts. each, or 30 cts. per super; whereas the ordinary fence for plain sections will cost about $1\frac{1}{2}$ cts. each, or about 8 cts. per super. There is still another objection; and that is, that these tin separators will be quite frail at the points above and below the slots, and would require a reasonably careful handling; but in the case of men like Mr. Aspinwall they will probably last a lifetime. If so, the expense item as well as the frailty objection would be both largely overcome.

Mr. Aspinwall is an inventor, and a mechanician as well. Indeed, I believe he is at the head of the Aspinwall Manufacturing Co. that is manufacturing a number of machines of Mr. Aspinwall's invention, which machines are pretty well known throughout Michigan and other States. Such a man would, as a matter of course, invent a super that would be worth the careful consideration of bee-keepers.—ED.]

WINTERING ON CLOSED-END FRAMES.

The Advantage of Such Frames.

BY T. K. MASSIE.

When I wrote the article, the "Evolution of the Hive Question," I intended to speak of the advantages of a closed-end frame for win-

tering purposes, *from my view-point*; but the grip had me so completely in its grasp that I don't know whether or not what I did say was said in the manner in which I wished it to appear.

The closed-end frame, forming, as it does, a double wall, at least so far as the ends of the hives are concerned, has great advantages over the open-end frames. My Dr. Tinker hives are made of thin material, $\frac{3}{4}$ inch for ends and $\frac{5}{8}$ for sides. In these thin-wall hives I winter on the summer stands. Each brood-chamber contains eight closed-end frames, and I use two brood-chambers (occasionally three) tiered up for a complete hive. I use thin $\frac{3}{8}$ -inch covers over the frames or sections the entire year. The only preparation is simply this: While the weather is yet warm in the fall, say the first of October, I see that each colony is bountifully supplied with stores to carry it to May. I place the thin cover on the hive, pressing it down firmly, and leave it for the bees to seal up air-tight with propolis. (This cover is just a bee-space above the frames.) Over the cover I place a cushion filled with some non-conducting absorbent to prevent the escape of the bee-heat. I now cover the cushion, "hive and all," with a telescope cover and leave them absolutely alone, not allowing any animal or rodents to disturb them till settled warm weather, say the last of April or first of May, at which time I overhaul and arrange each colony according to its requirements. Last winter the cold weather reached below zero for a number of days at a time, being 20 to 25 at one time for five days. I lost only 2 out of 93 colonies, and those two starved by not being able to cross over the space between the combs of the upper and lower brood-chambers, which are, top-bar, $\frac{5}{8}$ inch; bee-space $\frac{1}{4}$, bottom-bar $\frac{1}{4}$, or $1\frac{1}{8}$ inches. A top bar of less depth and a bee-space connection of some kind will prevent this trouble, as my experiments so far fully demonstrate.

So far this winter, with same arrangements (40 of my hives being the Danzenbaker hive with closed-end frames), I have not lost a single colony out of 117; and from Feb. 2 to the 7th of March the weather has been very cold, reaching below zero several times. With plenty of stores in closed-end frames, and sealed cover, I have no fears of winter losses provided we have strong colonies of young bees, and they are left absolutely undisturbed. Manipulation in winter breaks the sealings, admits the air currents, and allows the bee-heat to escape, thus preventing rapid brood-rearing in early spring, which greatly damages the colony, so far as a crop of honey is concerned.

In support of my position that the style of the frame (which is really the foundation for the size and style of hive) has a great deal to do with successful bee-keeping I will quote from our friends Aikin and Doolittle. In the *Progressive Bee-keeper* for Dec. 1, 1899, page 360, Mr. Aikin says:

There is no question whatever that the size of a hive (and the shape to some extent) is more or less a factor according to location. I have *repeatedly* tried wintering and springing in a very small chamber, for instance, nine frames 13 inches long and 6 deep, ten

frames 17 inches long by $4\frac{1}{2}$ deep, and single Heddon chamber and others, and I almost invariably fail to get a colony that will be of any account whatever by the honey-flow June 15th, and this in spite of the fact that the colony never gets out of honey; but just give two or three of such chambers and plenty of stores, and I get rousing colonies. It is not enough that there be still a *little* comb unoccupied with brood; there must be plenty in sight inviting the queen to occupy.

To which Mr. Doolittle, page 363, replies:

Depth of Frame.—Friend A. tells us how he has invariably failed in securing colonies "that will be of any account whatever by the honey-flow June 15th," in using single brood-chambers having frames of the depth of the Heddon or shallower, even though the colony did not get out of stores; therefore he concludes that he wants a large hive. Well, with me that failure points toward those shallow frames throwing the *cluster* out of its normal conditions, rather than the smallness of the hive. Had he used the same number of cubic inches in a hive having frames ten or twelve inches square in it, and then put on his surplus arrangement when needed by the bees, he would have found that such colonies might have compared favorably with those in his large hives. . . . Any thing which throws the cluster or colony out of its normal condition tends toward a less yield of honey, and especially something which brings on this abnormal condition a few weeks preceding the honey harvest.

Except the depth of frame advocated by friend Doolittle, I fully indorse what the brothers say above.

Box hives are usually made square, say 12 to 15 inches, and 18 or more inches deep. Hive an early large swarm in one of these hives and we can see how the bees work when left to their *natural* inclinations. They begin building comb at the top, filling with brood and honey, and chinking all crevices with propolis, thus making the hive air-tight, till they reach the bottom, where the winter cluster is formed on the bottoms of the combs, the winter stores just over their heads. The bee-heat enables them to follow up their diminishing stores through the cold weather till spring, when we find brood-rearing commences in the top of the hive, and again the downward work, which continues through the summer, commences. Therefore I conclude that a reasonably deep comb is best for wintering purposes. But we know that for the best results in comb honey we need a hive that can be contracted, hence two brood-chambers of shallow frames, like the Danzy closed-end frame, for instance, is the best and quickest way to accomplish the two objects sought; viz.: successful wintering and a large crop of comb honey. Side contraction with dummies is objectionable because it throws the "cluster out of its normal condition," and gives us just that much more work in handling so many loose pieces. Contraction, by removing a brood-chamber, or converting the same into a super filled with sections, has neither of the above objections connected with its manipulation.

Tophet, W. Va.

STARVED OR BLACK BROOD; HOW TO TREAT.

BY W. L. HAWLEY.

Dr. Howard is undoubtedly correct in saying that the diseased brood sent from York State is caused by scarcity of food. In May, 1897, I had over 200 colonies affected. Over half were very bad; in fact, if not checked it meant

ruin to me. At first I thought it was foul brood; but on thorough examination I came to the conclusion that it was not foul brood, but something else. I could not say it was pickled brood, nor could I call it starved brood, as we had been feeding all colonies, and every colony had an abundance of honey. On examining the colonies more thoroughly I soon discovered that the colonies that were affected the most had no pollen—not even one cell. What pollen there was coming in was immediately used up.

Being sure that I had discovered the cause, now for the cure. I procured one pint of crude carbolic acid, and a pail that held $2\frac{1}{2}$ gallons of water; put into the water $2\frac{1}{2}$ tablespoonfuls of the crude acid, procured a four-inch flat paint-brush, and with this brush, water, acid, and smoker, I proceeded to the first treatment with hive No. 1. I gave them a little smoke to let them know I was around; lifted the cover off, removed the quilt, and proceeded to sprinkle the top of the brood-frames, bees and all. I gave them a good dousing. Don't be afraid. It will not hurt them; and when you think you have given them plenty, give them a little more for luck. Stay with it till you see the water running out of the entrance of the hive; then replace the quilt, and sprinkle it until it is damp. Treat the rest of the yard the same way. Don't miss a single colony, if you want to make a clean job of it. Then 24 hours later take a pailful of wheat flour and your smoker; proceed to hive No. 1; go through the customary introduction of smoke; open the hive and remove one or two empty combs. Take one of the combs; hold it in any position over the colony, and proceed to get as much flour into the cells as you can. When you have filled the comb as full of flour as you can get it, replace it in the hive on one side next the brood-nest. Put the second comb, after it has all the flour you can get it to hold, on the other side of the brood-nest; and if the colony has not enough honey, feed it until it has. Do the same with every colony in the yard.

Examine all the colonies once a week; and if any colony gets short of flour or honey, feed either or both as the colony may need, and in three weeks' time you will have no sign of the disease.

The use of the carbolic acid is to help the bees clean house. By making all decayed brood the same scent, and also in scenting old brood, musty and sour pollen that may be in the hive, the bees will remove all such pollen as soon as the flour is added to the store.

Don't feed flour or any other substitute for pollen out of doors, as it is a bad way to spread any disease. Feed it to them in the comb direct by placing comb in the hive.

Fort Collins, Col.

[I should incline to the belief that you did not have real black brood, or it would not have succumbed so easily to your treatment. The same method will not cure foul brood, for I have tried it repeatedly and faithfully, without apparently doing any good. If you have any more of this diseased brood, send me a

sample in a stout tin box. I think I could determine whether it were the same as has been found in New York.—ED.]

OUR OWN APIARY AS IT IS SEEN IN THE EARLY SPRING.

BY ERNEST R. ROOT.

We have given our readers two or three views of our home yard when the grapevines were all in leaf. But such views necessarily obscure the hives, almost completely hiding them. Thinking that our readers would like to see how many hives we have (or, rather, a part of them) we took a view from a roof of one of our buildings, and the same is reproduced in half-tone on another page. This is the old original apiary, the hives being arranged on the hexagonal plan as originally laid out in 1879—just about 21 years ago. While it presents a very pretty appearance, yet if we could do it over again, that is, change the grapevines, we would arrange the hives in groups, either in pairs or fives, for the sake of economizing space, economizing steps, and economizing labor in general. Then if I could have my way I would have basswoods about 20 or 30 feet high, and under each tree I would put about five hives; each group of five would be placed 16 feet apart, so that a wagon could be driven down between the rows whenever necessary.

The photo shows only about three-fourths of the home yard, the rest of the hives being out of view. The out-apiary (which is not hauled away until just at the approach of the honey-flow) does not show in the view. This is arranged on the group plan, and our men all unite in saying that in this portion of the yard they can do more work, and more comfortably, than they can in the main apiary where each hive has a stand by itself. The grapevines, our people all voted as a nuisance. The young shoots with their tendrils will sprawl all over, catching in clothing and veils while one is working the hives. While vines afford fairly good shade they need a great deal of care, and then it is practically impossible to work with bee-tents, which we consider so necessary in queen-rearing, during the robbing season.

In our next issue I will give you a view of an apiary in a grove that looks so delightfully cool and pleasant that one almost envies the owner the privilege of working in that yard. If trees are trimmed high so that the sun can strike the hives up till about 9 o'clock, and again about 3, there will be no trouble from too much shade; and during that portion of the year when the bees need all the sun they can have, the trees will not be in leaf; and just so soon as the sun begins to get too hot, nature provides automatically the necessary shade during the heat of the day. Nothing, to my notion, equals a good tree properly trimmed; and nothing anywhere near so economizes labor as having the hives in groups, because one can use one hive to sit on while he is working at the other, or he can use them as benches.

CLOSED-END FRAMES.

How they should be Constructed; how to Keep Noxious Insects from Hives: a New Method for Introducing; Perforating Separators.

BY W. B. RANSON.

[The following letter, addressed to Dr. C. C. Miller, was by him sent to us with the remark, "Some good things in this." On reading the same I found myself of the same mind, and I therefore take pleasure in placing it before a larger circle of readers.—ED.]

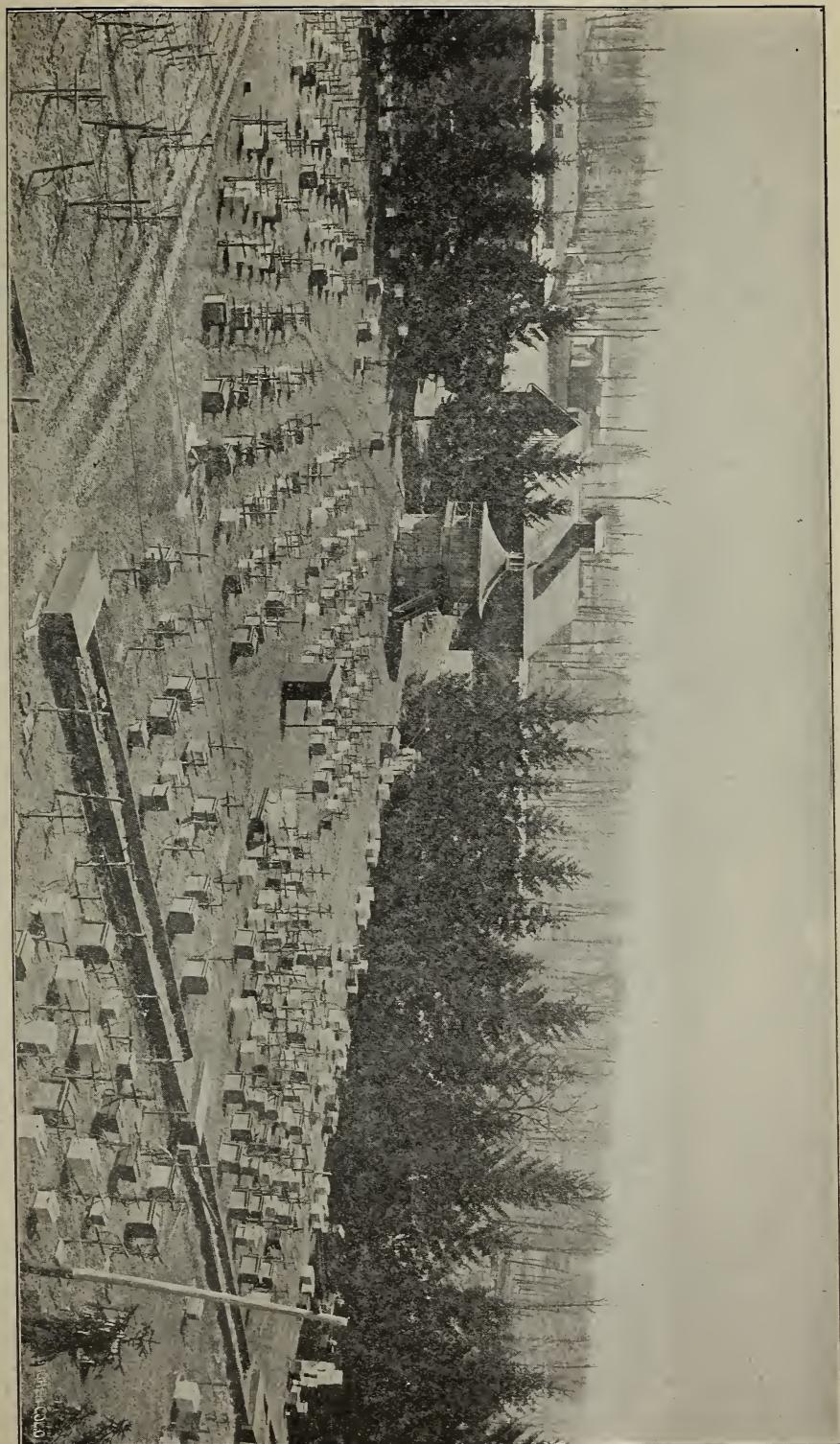
My bees wintered last winter without the loss of a colony, and came out strong in the spring. All wintered on summer stands, as I abandoned the cellar years ago, and have not lost a colony of bees in wintering for six or seven years. My neighbors lost many last winter. I will give later my method of packing. I am using over 200 closed-end frames, and like them much for outdoor wintering. Right here it is surprising how little trouble with propolis I have when bees are shut out from the rabbits and from the outside of the end-bars of the closed-end frames. Practice for years here in the Rockwood apiary convinces me thoroughly that the best way to keep propolis off is to shut off the bees from all parts of the brood-frames except the inside, and that the bee-space outside of the end-bars is a mistake. The first Hoffman frames sent out with the wide ends of the top-bars closing up the rabbits are best for this practice; and a wedge-shaped strip across the ends of the hive at the bottom, so that the closed-end frames fill at bottom, and the wide ends of the top-bars close up the rabbit, the propolis gives less trouble than one would expect.

Last season, although a very light honey-flow, my bees gave us an average of 50 lbs. of comb honey per colony, of very superior quality, and for which I received 12½ and 15 cts. for the two grades here at the yard, and empty cases returned. So much for home market. The management outlined in my letter, given in GLEANINGS, p. 260, 1899, gave the best results, and kept down increase admirably. Now for a few notes.

To keep ants, bugs, roaches, grass, etc., from hives, take a common sprinkling-pot filled with coal oil, and at night sprinkle the hive-stands and grass, but don't let it touch the bees.

To get the bees to finish the outside sections in the super, place a piece of tin over the middle brood-frames so the bees will pass to the super at the sides and rear end.

To introduce a valuable queen, take a large Benton cage and provision it, and put the queen in it all alone. Take out the queen from the colony to be requeened, and at the same time pick off from the combs 12 or 15 young bees just hatched; put them in a cage; wait a moment for these babies to crawl over the queen and scent her with their damp feet and wings. Now pick off another lot, a little older, and put them in, and in another minute pick off a dozen still older, say those old enough to shed their veils. Now close up the hive for an hour. Take the cage with the queen and 40 or 50 bees, and notice them care-



A PART OF THE HOME APIARY OF THE A. I. ROOT CO., AT MEDINA, OHIO.

fully; and if the older bees should attack her, smoke them; but they would hardly do that. In a few minutes you will find the oldest bees caressing the queen, having accepted her in the cage. Now give them to the colony to eat out the candy and liberate the queen; and if the work was properly done, the queen is perfectly safe. It seems that the damp feet and wings of the very young bees in crawling over the queen cause the older bees to accept her in the cage; and once they commence to caress her in the cage she is safe. I introduce virgin queens in this way without difficulty.

To perforate separators, take a hard-wood block sawed off smooth. Lay the separator flat on the block, and with a light hammer and a $\frac{1}{4}$ -inch belt-punch cut the holes as fast as one can strike, and move the punch, making the perforations nice and accurate in size; and by dodging the holes in the rows, broken-range fashion, make a better separator than slats, as the face of the comb honey is less likely to be ridgy than when an opening runs all the way across between slats.

Newriver Depot, Va., Feb. 12.

SOME DIFFICULTIES IN CONNECTION WITH FOUL BROOD.

Read Before the California State Bee-keepers' Convention; a Clear Concise Statement.

BY THOS. WM. COWAN.

Those who have had very much to do with foul brood will readily admit that, for the average bee-keeper, there are many and serious difficulties in connection with this disease which baffle him, and can be overcome only by an intelligent mastery of the subject. The disease is allowed in many cases to break out and spread, without the slightest precaution being taken, sometimes through ignorance, carelessness, or indifference on the part of the bee-keeper, to the detriment of others keeping bees in the vicinity. In consequence of this it is no wonder that foul brood is spreading, and that there is a demand among intelligent bee-keepers in all countries for legislation to prevent the industry from being destroyed. To be brief and concise, I will mention only some of the difficulties we have to encounter to make people understand the conditions under which the disease exists, or to study its etiology.

1. That foul brood is terribly contagious, and that as great care should be exercised in dealing with it as with smallpox or cholera. What these diseases are to man, foul brood is to bees.

2. That foul brood is a germ disease, and is produced by the presence of a minute organism called *Bacillus alvei*, which exists in two different forms. In the earliest stages of its existence it is in the form of a rod, and is usually then termed *bacillus*, to distinguish it from the later stage, or *spore*, as it is then commonly called.

3. That there is a great difference between these two stages; and as both may exist in the hive at the same time, the treatment that

would destroy the one would have no effect upon the other.

4. That *Bacillus alvei* is in form rod-shaped; and each rod, as it attains full growth, splits in two, each of these taking up an independent existence, and going through the same process; and as two generations can be raised within one hour, the same rate of progression being kept up by each individual, it is not astonishing that foul brood spreads so rapidly.

5. That under certain conditions bacilli have the power of forming spores which are analogous to seeds or plants, and are endowed with wonderful vitality, being able to endure adverse influences of various kinds, without injury so far as their germinating powers are concerned. Boiling water and freezing will kill bacilli but not their spores. In the same way chemical reagents which readily destroy bacilli have no effect upon the spores unless given in such strong doses as would kill the bees. (It is extremely difficult to make people understand this great difference in the vitality of bacilli and their spores, and it is here that the great danger arises.)

6. That spores coming in contact with suitable nutrient material have the power to germinate into bacilli, after the lapse of long periods; and according to Dr. Klein, one of our best authorities, there is no reason to assume that these periods have any limit. This is why the disease sometimes breaks out in districts where bees have not been kept for years.

7. That experience has shown with foul brood, as in all epidemic diseases, the weak, sickly, and badly nourished are attacked and become centers of infection to others; and so rapidly does the disease spread by contagion that, unless precautions are taken, a whole neighborhood may become affected in a short time.

8. That colonies suffering from foul brood are usually weak, and this induces bees from other hives to rob them of their honey, and thus carry off the germs of the disease along with their ill-gotten gains.

9. That combs which have contained foul brood retain the spores. The queen lays eggs in the cells, and the workers deposit their honey and pollen in them. Both honey and pollen in this way become vehicles for the transport of the disease to the larvae in the process of feeding by the nurse-bees. The workers, in endeavoring to clean the combs, scatter the spores, which may also be driven out of the hive by the current of air produced by the fanners at the entrance in their endeavor to rid the hive of foul odors.

10. That, if on examining the combs, to all appearance healthy, with brood compact and larvae bright and plump, we find here and there a cell with young larvae moving uneasily, or extended horizontally instead of being curled up, and changing to a pale yellow color, we at once detect the first symptoms of foul brood. The germ at this stage being only in the rod form, the further progress of the disease can be arrested by feeding the bees with syrup, to which a suitable antiseptic drug is added. The bees then generally remove the dead larvae.

11. That apart, however, from experienced bee-keepers or trained experts, very few are fortunate enough to detect the disease at such an early stage, or effect a cure so easily.

12. That when the combs have irregular patches of brood, with sunken and perforated cappings to the cells containing the putrid, coffee-colored, ropy mass inside, the treatment should be:

a. If the colony be weak, destruction of bees, combs, frames, and quilts, together with thorough disinfection of hives, is by far the best course to pursue. We thus destroy the spores, and so remove the source of infection.

b. If, on the contrary, the colony be still strong, the bees may be preserved by making an artificial swarm of them, and feeding them on medicated syrup for 48 hours, after which time they can be placed in a clean hive furnished with sheets of foundation, and fed with medicated syrup for a few days longer. The combs, frames, and quilts are burned, and the hive disinfected by being either steamed or scrubbed with boiling water and soap, and then painted over with a solution of carbolic acid; and when the smell has disappeared, the hive is ready for use. (The bees are allowed to remain 48 hours in the empty hive, for by that time the honey that they may have taken with them, and which might contain spores, will have been consumed, and the diseased bees will have died off.)

13. That in his endeavors to rid his apiary of foul brood, the bee-keeper must also raise to its proper standard the lowered vitality of the bees which enabled the disease to get a footing. This he must do by keeping his bees strong with young and prolific queens, good wholesome food, cleanliness, and proper ventilation.

14. That the bee-keeper may himself be a cause of spreading foul brood by indiscriminately manipulating, first diseased and then healthy hives, without taking the precaution to disinfect himself or his appliances. Clothes, appliances, and hands should be washed with carbolic soap, and other articles disinfected by spraying with some suitable disinfectant.

These are only a few of the many difficulties, and only the fringe of the subject has been touched upon; but sufficient has been said to show that, unless great precautions are taken, it is very difficult to get rid of the disease. It thus becomes obvious that those who fail to realize the danger of infection, and who will not take proper means of ridding their apiaries of foul brood, or of preventing its introduction, are a real danger to the industry.

[No. 5 should be read very carefully by every bee-keeper, because it is a fact that many of them do not or will not understand the first principles with regard to all contagious diseases. Indeed the whole article will bear careful reading.—ED.]

C. R. M., Texas.—As yet we know of no reliable cure for bee-paralysis. The best I can advise you is to destroy the queen and then put the bees on clean combs or frames of foundation with good food.

SHOP-TALKS.

Why Bees Swarm.

BY UNCLE LISHA.

I had just got my fire built, and my workshop was warming up, when who should drop in but Deacon Strong, with a cordial good morning?

"Good morning, deacon; glad to see you."

"Thought I would just step in and inquire how your bees were wintering."

"Pretty well, deacon, I think. I was out to my north yard the other day, and looked them over. Thieves have been at work there some, and there were a good many colonies that were pretty weak, and they were packed when the weather was warm, and I was afraid there were a good many that were not crowded up close enough, and I was glad I went. Bees are now clustered so close I could tell to a dot just how strong they were, and I had occasion to take out a good many combs of honey, and, with an extra division-board, reduce the brood-chamber to four or five combs. The bees would have had hard work to pull through if I had not looked after them."

"Why," said the deacon, "I never heard of any one doing that before in winter."

"Well, I never did either; but a bee-keeper has got to be on the lookout or he is very liable to meet with loss."

The deacon hacked and coughed a little, and then began:

"I liked what you said in *GLEANINGS* about improving bees so as to get more honey. It is a pretty good idea if it can be done; but I think you were a little hard on Culley. I think just as Doolittle does. Bees were told to multiply and replenish the earth as well as every thing else, and they are going to swarm when they feel like it, and you can't help it."

"Yes," said I, rather slowly and softly, for the deacon has the reputation of being rather set in his ways, and pretty quick-tempered as well. "Yes, we read in the first chapter of Genesis how, when the whales and every thing that moveth through the seas, and the fowls of the air, were created, they were told to multiply and replenish the earth; but nothing was said to the bees about it. Bees are not fowls nor whales, nor do they live in the sea."

The deacon is pretty well up in Scripture, and, quick as a flash, he said, "Wasn't Noah commanded to bring every thing out of the ark, the fowls and cattle, and every thing that creepeth on the earth, that they might breed and multiply abundantly? Doesn't that include the bees?"

"Well, deacon," said I, "I believe you are right; there is in bees an instinct or impulse to increase the number of their colonies by swarming. It is as much a part of their nature as it is to gather honey or care for their brood. And that's the mischief of it. Swarm they will. If our honey harvest comes with basswood we could get them up, old stocks and new ones, ready for it; but when it comes with raspberry and white clover, by the time the bees get ready to do much in supers the harvest is over. I believe some years I could

double my honey crop if it wasn't for their disposition to swarm just as soon as there is any honey to amount to any thing, and sometimes before."

"That is so," chimed in Tim Fasset, who had come in unobserved, and was sitting on a nail-keg back of the stove. "I would give five hundred dollars for a breed of bees that wouldn't swarm. Down at Slabtown last year just as my bees began to work in the surplus boxes they began to swarm. We put back, and cut out queen-cells, and united, and changed places; but when the season was through we had only 500 finished sections and 2500 partly filled ones, fit only for the extractor. I tell you, we have got to get rid of this swarming some way."

turned on his heels and left. After the air had cleared a little I began.

"Now, deacon, I want to have a plain talk with you. It is a matter of a good deal of importance to a good many of us bee-keepers whether we are to have a breed or *strain* of non-swarming bees."

"It can't be done," said the deacon. "They were told to multiply, and it is a natural instinct."

"So is fear a natural instinct," said I. "Was not Noah told that the fear of man should be on the beasts of the field and the fowls of the air, etc? But we see when man tames them and domesticates them the fear is taken away. So the Lord gave sheep and cattle horns to defend themselves with; but when



"IT'S AGAINST BOTH NATURE AND SCRIPTURE. IT CAN'T BE DONE."

"It can't be done; it's a natural instinct," said the deacon.

I don't know what he would have said further; for just then Dan Savage opened the door, and, before I had time to look around, began:

"Say, Uncle Lisha, you have got a hog-hook, I reckon, hain't you? I's killing my old Poland-China hog, and when we got him in the scalding-tub the hook gave way, and we all had to nerve to like Caesar, to get him out. A pretty hot scald, I reckon. I tell you, them Poland-China hogs keep easy, and there is lots of money in them too I reckon. But you didn't tell me whether you could lend me a hog-hook."

"No, sir, I could not," I replied, rather curtly. "I haven't a hog-hook nor a hog nor a hogpen, nor any thing that smells like one, around my premises."

"I reckon that's so," he remarked, as he

man destroys their enemies he can get rid of these unnecessary appendages."

"I tell you," said the deacon, "it is against Scripture."

"Now, look here," said I. "Doesn't it say in that first chapter of Genesis that man was created to have dominion over the beasts of the field and the fowls of the air, and every thing? and he was commanded, not only to have dominion, but to subdue them for his own use; and you see how natural it is for man to have dominion and rule over the beasts and fowls and fish, and even his fellow-man. You see what immense herds of buffalo he has subdued. See how he has subdued the great whales in our northern oceans. My dictionary says, to have dominion means to have the power to direct and control and dispose of at pleasure. Thus a man has dominion over horses and cattle and sheep, and every thing he can make do as he wants it to. Yet a man

can hardly be said to have dominion over a balky horse, or at least he can not be said to have subdued it" (I knew the deacon was a little tender on this point), "nor does a man have dominion over his bees if, when he puts on his supers for them to fill, they turn their backs to the supers and run away to the woods. Swarming was well enough in a state of nature; but when with improved hives we can increase our bees without it, why—it seems as though we, if we are to fulfill Scripture, should be able to direct and control them without their swarming. We can not be said to have subdued them till we have subdued their disposition to swarm. I tell you we must compare Scripture with Scripture if we would get its full meaning. Galileo you know, was persecuted because he taught that the sun did not revolve around the earth, when the Scriptures said the sun rose and set; and so of the geologists, and a great many others. I am willing to admit that the swarming instinct is a natural one and a very strong one if you wish; but I don't believe it can not be overcome, for we find it very variable. If some hives are full of brood, and honey coming in even very slowly, they are liable to swarm; while if it is coming very fast, as likely as not they will refuse to swarm at all. If they have an old queen they may swarm if the hive is not half full of brood; but if they have a young queen, as likely as not they will refuse to swarm, even if every thing else favors. If they belong to the despised black race they may work right on, forgetful of the command to multiply; but if their ancestors came from sunny Italy it is more than probable they will believe in expansion, and may make a start before six o'clock in the morning, as I had several do one morning last summer.

"Now, I should like to know if this heaven-ordained instinct doesn't apply to all alike. I was reading only the other day in Langstroth's work, that, 'while some colonies swarm repeatedly, others, apparently as strong in numbers, and as rich in stores, refuse to swarm, even in seasons in all respects highly propitious'."

"That's so," said Fasset, from behind the stove. "We have got to get round it some way, and the quicker the better, and—"

Just here 'Squire Fullam walked in, and, with a hearty salutation, sat down near the fire to warm himself.

"Pretty cold day," he began, as he warmed up; "but the sun is getting up pretty well now, and it will soon be spring. I am in no hurry for it. I have got plenty of hay for my cows, and then I put ten acres of corn last fall into my silo, that will last till June. I tell you this ensilage is a great thing to make cows give milk in winter. I am making 35 pounds of butter a day, and it sells as quick as wink for 25 cts. a pound. Ours is a great State for dairying—a great State, I tell you."

I don't know where he would have stopped; but Jerry Benton came in just then. Now, Jerry is a sort of sport. Hoping I might do him good I tried to treat him very politely, and said, "Good morning, Jerry. You are

quite a stranger. I haven't seen you in here in a long time."

"Well," he began, "I heard the deacon was in here, and I thought I would drop in and talk politics a little. Some of us are talking of setting up a license candidate for the legislature next fall, and I just dropped in to see how some of you felt about it."

"Let's see. Our State has now been under a prohibitory law for nearly fifty years," began the deacon, somewhat diplomatically, "and you license fellows have been pleading for a license law for a good many years too, because you said a prohibitory law wasn't enforced. During the last year it has been very thoroughly enforced, and now you want license more than ever. I have been thinking the matter over, and yesterday I took down an old dictionary that was my wife's brother's, just to see what license meant. The first word I found that began to look like it was *lice*. A little further down was *license*, and just below was *licentiousness*. When I saw that, I then and there made up my mind that, whatever virtue there might be in license, it had certainly got into pretty bad company."

"Hurrah!" shouted Esquire Fullam. "I tell you, ours is the best State in the Union."

I am afraid some of the rest of us were more enthusiastic than polite, for Jerry just put on his hat and walked out without saying another word.

"I'm glad he has gone," said Tim Fasset, "for I had a great deal rather talk about non-swarming bees than license. Can you tell me, deacon, why it is that, when you use the extractor freely, bees swarm but little? Are they not commanded to swarm or multiply when the extractor is used as well as when sections are put on?"

I noticed, just as soon as Tim spoke of non-swarming, the deacon's eyes began to twitch, and his face flushed up until it was as red as a beet. I knew his wrath was kindled, and I was afraid he would say something dreadful; but he didn't. He was silent a few moments, and then said he, "I guess I had better go and fodder. Betsey will be calling me to dinner pretty soon, and she says if I don't come in when she calls me the dinner will get cold, and be spoiled."



HIVES NOT ALL THERE IS IN APICULTURE;
QUEEN-CELLS VS. VIRGIN QUEENS FOR
NUCLEI; CARING FOR CELLS.

"Good afternoon, Bro. Doolittle. I called over to have a little talk with you about hives. I see by reading some papers that were lent me that, if I would succeed with my bees, I must adopt a hive patented by — — —."

"Tut, tut, Bro. Smith! You ought to know better than to think, as some seem to, that large yields of honey are owing entirely to the

style or patent of the hive used. This is not so."

"Don't the hives used have any thing to do with a large yield of honey?"

"Hives have something to do with the yield of honey, of course; but nothing as compared with a thorough knowledge of the location we are in, and an understanding of how to apply that knowledge so as to have the maximum number of bees at the right time, that they may secure the yield of honey when it comes."

"But will not the hives that are fixed in accord with the wants of the bees give this maximum number at the right time?"

"The manipulation of hives has more to do with our surplus crop than the hives themselves; for, no matter how good the hive is, if the combs are never touched, or the surplus room not put on at the right time, all may count for naught to the would-be bee-keeper, and the flowers bloom in vain as far as any profit to the user is concerned—a user who trusts simply to the merits of any hive, no matter how high-sounding a name it may have."

"Now, look here! Don't the hives used by Dr. Miller, Elwood, Golden, Root, Hutchinson, etc., give them the yields of honey they secure and report?"

"In order that no one should get the idea that the hives used and recommended by our best and most successful apiarists would give them thousands of pounds of honey without work, I have said, in concluding several of my articles in the bee-papers, that, if any one could not spend the time on bees which they require he had better keep out of the business."

"Is there nothing in what I have heard, that 'bees work for nothing and board themselves, where given a good hive for their home'?"

"I know of no hive with which a man can secure large results by simply folding his hands and letting the bees 'work for nothing.' Such is not the economy of nature; and in order to succeed in any calling in life we must put energy, industry, and perseverance into our work, if we would reap a harvest worth the gathering."

"Then must the bee-keeper work from twelve to sixteen hours a day, as does the farmer, to be a successful apiarist?"

"To work hard from twelve to sixteen hours each day, at mere physical labor, is not all that is required, as many assert by their actions, if not by words; but there must be an energy and push, mentally, sufficient to grapple with all of the unsolved problems which are in the way of our success. If these are all combined to the same extent that they are in other callings in life, there is no reason why bee-keeping will not give as good results for what is expended upon it as any other vocation which is honestly and economically pursued, even though it is not supposed to be thus by the majority of the world."

"Is it 'energy and push,' more than hives, which gives the large yields of honey reported?"

"I wish it might be understood that large yields of honey come not from hives, but can be secured only through an energy and push sufficient to bring large numbers of bees in a hive, and secure said large number of bees in time for the honey-harvest. In this lies the great secret of successful honey production."

"Then I am to understand that the hive has nothing to do with the matter of successful honey-production?"

"No, not just that. The hive whose every manipulation may be made with ease, and which is also perfectly simple, and well adapted to the wants of the bees and apiarist, may be made a great power in the hands of a man of energy and push toward rolling up tons of honey. But there are plenty of such hives now in use not covered by a patent."

"I suppose you would name the Langstroth as among that number."

"The Langstroth hive is certainly a good hive, and the frame principle in it is one of the best things that was ever given to bee-keepers—the same frame principle being that used in by far the larger share of the practical bee-keepers throughout the whole world. Did I have twenty or more colonies in the Langstroth hive, or in any of the many good hives of the present day, using that frame principle, I should rest content that I had as good hives, all things considered, as there were to be had."

"But would you try nothing else?"

"Only in a very limited way, till I had proven them superior. It is barely possible that, in the future, a better principle may be invented, but so far there never has."

"Then you would not invest in any patent hive so as to secure and hold certain territory in this State?"

"Well, no; not till I knew more about the matter than I now do. But here comes neighbor Brown. Undoubtedly he has some questions to ask. How do you do, Mr. Brown?"

"Fairly well to-day. I come over to have a little talk on queen-rearing. I read your article in GLEANINGS, page 175, with interest. But I wish to know further in the matter. Will you please tell me how to care for ripe queen-cells, and the virgin queens, after they are hatched, until they are wanted for the nuclei?"

"After trying all plans given, I have settled down to the conclusion that the best way for caring for ripe queen-cells is to make calculations to have nuclei ready to care for them just when they are ripe, so that the ripe cells are taken from the colony raising them and given to the nuclei at the same time."

"But suppose your nuclei are not ready for them."

"But I don't suppose any such thing. The person who looks ahead and plans accordingly will not start the queen-cells till he or she sees in the near future the nuclei to put them in, just when they are ripe. Thus we have system about our work, and work with a definite object in view."

"Do you not keep queen-cells away from the bees till they hatch, at times?"

"I used to do this, and very many do it still; but if we wish the best of queens we will en-

deavor to have both cells and virgin queens so the bees have immediate touch with them at all times."

"Why, please?"

"After twelve to fifteen years of careful watching I have become satisfied that, for every day queen cells or virgin queens are kept away from the immediate touch of the bees, especially the virgin queens, their life and usefulness are shortened at the rate of three months for every day thus kept away from the bees. Where just the right temperature can be provided, it does not seem to make so much difference with the cells; but I am quite positive about the young queens."

"Please explain a little more regarding this matter."

□ "About fifteen years ago I had a mania for introducing old virgin queens to nuclei, so that I might be able to send off queens to the trade much faster than by the cell plan, giving one of these old virgins to a nucleus at the same time that I took a laying queen away. Then I also sent virgin queens to other parties to have them mated and returned to me, and out of scores tried for the different purposes I never had one *single* queen thus treated live two years, while very many of my other queens, which were in immediate touch with the bees at all times, live to be four and five years old. At that time I had 'growls' from my customers regarding the short lives of some of the queens purchased of me; but since I adopted the motto of 'No queens but what the bees cared for *all* the time,' I have had no complaints of inferior queens in any respect."

"How is the looking-ahead part, you spoke of a little time ago, brought about?"

"First by knowing your location, so that you can be reasonably sure about when your honey-harvest will commence. Five to ten days before this commencing, you wish all of your increase made, and then is when you wish your laying queens to give the queenless part of your division. Then the ripe cell from which this laying queen emerged must be given to the nucleus twelve to fourteen days before she is taken out, if she is to lay enough in the nucleus to keep up its population; and the colony rearing the ripe cells started at queen-rearing ten or eleven days before the ripe cells are taken. Thus you have 27 days, previous to your expected honey-harvest, as the minimum time for commencing operations, and 35 days as the maximum time. I think you can catch on now. If you do not, come again and I will explain further; for it is now time that I go to the postoffice, so as to get an article out on this mail for GLEANINGS.

IT would seem, in view of the awful extent of adulteration being carried on in some sections of our country, as if more bee-keepers ought to turn their attention to comb honey. The general public in many localities is afraid of extracted honey; and, in fact, much that they do eat is not honey, but a very poor imitation.—ED.



[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

BEES ON THE HIGHWAY.

I have some bees, and they are close to a public pike, and some have told me if I had any trouble with teams passing that I would be good for all damage. Will you give distance they would be clear of the pike?

Bradford, O., Mar. 14. H. E. WILLIAMS.

[I do not believe there is any law specifying distance that bees should be from public highway; but to avoid trouble with passersby I would suggest that, if you have the room, you place the bees in the back yard, or as far from the highway as possible. If you have not the room, then leave the bees where they are; but be careful about stirring them up so they will be cross. A high board fence or a hedge of good height between the bees and the highway would avoid most of the trouble; but, better still, put the bees at least 100 feet from the road if you can.—ED.]

DISPENSING WITH WIRES; FASTENING FOUNDATION TO THE TOP AND BOTTOM BARS.

While putting in some foundation the other day I thought of a plan that might help you. May be you have already tried it. Suppose you make the bottom-bar of your frames a lit'l thicker, and put a groove in it as well as the top-bar, leaving out one end piece, and sliding the sheets of foundation in it as you would a glass pane, and then nail on your end piece. Don't you think that would save wiring them? or would they sag in the center?

DAVID TAYLOR, JR.

Laurel Hill, La., Apr. 5.

[The foundation put in as you describe would sag in the center. You can not avoid the use of wires, splints, or some sort of support if there is a bottom fastening as well as at the top. If there were a wide saw-kerf clear through the bottom-bar, so that the bottom edge of the foundation could work through easily, allowing for stretch, you could secure a bottom and top fastening without sagging.—ED.]

BLACK BROOD IN MICHIGAN.

Having read Dr. Howard's article in GLEANINGS I have found out what is the matter of my bees, for that is just what it is—black brood. I have had it for six years, more or less. I sent you specimens during this time to see what the trouble was. You always said *not* foul brood until last year when you decided it was; but I was not yet satisfied, for it stayed too long in the hive. I have one now.

It was in 4 years last summer, and they went into winter fairly well. I destroyed a number last season, and melted the combs of 42 hives, boiled the frames and hives, but not in linseed oil, and expect to use them this season.

NELSON DEWEY.

Birdsall, Mich., Feb. 22.

HOW TO GET CANDIED HONEY OUT OF COMBS; HOW TO DO IT WITHOUT MELTING COMBS AND HONEY; A VALUABLE SUGGESTION.

I notice in a late number of GLEANINGS where some one asks how to clean candied honey out of brood-combs; and the answer given is, "There is no way except to melt them."

In the winter of 1898 I had over 100 combs well filled with honey that I had put away for spring feeding. The honey in these combs candied. I think this was due partly to their being stored in a very cold place, and this honey was what we call "alfalfa" honey, which seems to candy more quickly than other sorts. Well, I did not like to melt the combs, so I thought I would experiment a little. I uncapped some, and then, filling a large tub with cold water in which I put about a quart of vinegar, I filled it with combs, put a weight on to hold them down, and left them 24 hours, when they came out as clean as ever—no honey, no pollen. They were a little sticky, but I hung them in some empty hives, and the bees soon cleaned them up. I used the one tub of water for all the combs. I cleaned about 150, and then put the honey and water into the vinegar-barrel. I am positive this plan will work every time.

Ft. Collins, Col. MRS. J. M. MCLEAN.

[This is indeed a valuable suggestion; but, say, do you suppose the vinegar had any direct influence on getting the honey out? Would not the combs have been emptied just as soon without the acid? I don't know, and simply ask for information.—ED.]

HOW TO ITALIANIZE AN APIARY WITH TWO QUEENS; HOW TO RAISE CHOICE DRONES.

On account of being so busy with other work I have neglected to keep my bees pure, so I am now entirely out of a pure colony. I want to Italianize them this summer, but am not able to buy queens for all of them. I thought my best way would be to buy two queens not in any way related, and raise my queens from one and drones from the other to fertilize those queens. There would be no inbreeding in such a case. Will you please advise me as to the best way to go at it to get this queen to raise drones and have them in readiness along at times as I might need them? I understand it is difficult to get a young queen to raise drones. A clipped virgin queen might do all right, but in giving the bees frames of brood along at times to keep the colony in good working order would not the bees persist in building queen cells, and destroy this queen? and wouldn't she lay her drone eggs in this worker comb, which would raise dwarfish,

worthless drones for my use? Tell me the most reliable certain way you know of, and whether you would risk only the one queen for the whole business, and how old it is best for her to be. Perhaps a pure drone-laying queen would be best for me.

JOHN R. MILLARD.

Flagler, Iowa, Apr. 10.

[You can Italianize an apiary with two queens of selected stock, one to raise the daughters and the other the drones; but unless the queen is a year old, and unless, too, you supply her with plenty of drone comb, feeding the colony a little every day when honey is not coming in, you would not secure very many drones. Of course, you understand that you would have to trap the drones of all other colonies, with perforated zinc, or, better, Alley traps, or, better still, give each black and hybrid colony nothing but worker combs. Even then it may be desirable to have perforated zinc over the entrances of all such hives.

The problem of making some choice queen and her colony rear a large lot of choice drones, just at the time we want them, is not an easy one to solve. To get a sufficient number of drones, it might be necessary to have several queens, all of whose colonies were supplied with drone comb. A drone-laying queen—one that has been a good queen in her day, and whose *workers* were uniformly well marked, and desirable in other respects, might afford the easiest solution of the problem, but it would be doubtful if it would be wise to clip an average virgin queen and compel her to go into the business of furnishing drone-eggs. In the first place, you can not determine a queen's purity by the markings of her drones. While the male bees vary greatly, the worker bees should show at least three yellow bands.

Yes, the bees would try to raise cells where there was a virgin that had laid only drone eggs.

It may be the time will come when a drone-laying queen will have a market value. We have seen the time when we would have given more for one of them than we would for two or three high-priced mothers of good workers. In the fall of the year it is difficult and almost impossible to get a normal queen, even by stimulative feeding, to lay eggs in drone-cells. She seems to know that cold weather will soon be on, and that it is not the time for that sort of business. For late laying of drone-eggs we have had to rely something on drone-laying queens, and even those from virgins; but we do not like to use these latter if we can avoid it.—ED.]

REARING DOOLITTLE CELLS IN BROOD CHAMBER.

Will you please tell in full, as soon as possible, about rearing queens in Doolittle cells in brood-chamber, as you practiced last season? Is it successful?

Pearl City, Ill., Mar. 21.

E. J. B.

[This matter is very fully explained in our issue for July 1, 1899, page 510. In a word,

the important requisites are these: Stimulative feeding (i. e., half a pint of sugar syrup daily), and placing the cells to be built, in the center of the brood-nest surrounded by perforated zinc; for the queen of the colony must not have access to the cells or she would soon destroy them. Your question, I take it, implies that you desire to know how to rear Doolittle cells in the brood-nest of a normal colony having a queen. Of course, it is no trick at all to raise a kind of cells in queenless colonies without even feeding. Such cells do not produce as good queens by a long way as those reared under the swarming impulse or stimulative feeding. To fence the comb having Doolittle cell-cups off into a compartment by itself, we have two tight-fitting division-boards of perforated zinc that reach to the bottom-board clear out to the ends of the hive, and reaching up to and in contact with the cover above. A frame of unsealed larvæ, or two of them, preferably, are placed, one on each side of the frame, with cell-cups; then the perforated zinc division-boards are set down in the spaces that will inclose these three frames off by themselves. The queen is given the range of one or the other sides of the brood-nest. After the first batch of ripe cells is taken out, she is transferred over to the other side, and then the operation is repeated as before. But I desire again to lay very great stress on the *stimulative feeding*, and on the frames of unsealed larvæ being placed as indicated, and, when possible, securing as strong colonies as can be had at this season of the year.—ED.]

TRANSFERRING AND PUTTING BROOD ABOVE PERFORATED ZINC.

I have purchased 20 colonies of bees in Langstroth hives, and in about two weeks intend to transfer them to Dovetailed hives. I want to use full sheets of foundation (wired). How will it do to place the frames containing brood and eggs in the upper story, with a queen-excluder between, until the eggs shall have hatched?

W. S. Hoss.

Indianapolis, Ind.

[If colonies are already in movable-frame hives from which they are to be transferred, it is usually the practice to put all combs containing brood in an upper story above a sheet of perforated zinc. When the brood hatches out, then the combs are cut out of the frames. If the bees are in box hives in the first place, they should be drummed out, and old combs containing brood should be left in the old hive beside the new one, till all brood hatches; then all old combs may be cut out and melted up. But box hives, when set down beside the other hives, should have their entrances at right angles; or it would do no harm if the entrances were reversed, one pointing in one direction and the other the direct opposite.—ED.]

NEW HONEY FROM THE TI-TI.

I visited an apiary this morning, and the owner had just finished hiving a swarm of bees. He said, "I threw water upon them,

and they soon settled." They clustered upon a mulberry-tree, which was full of green fruit. The bees are diminutive blacks, kept in movable-frame hives. This apiarist reports the season late, as bees usually swarm in March. There had been much honey dew, but now bees were gathering very nice white honey from the ti-ti. He had twelve colonies—sold some honey in the town, and used a good deal himself when he had no sugar—sweetened his tea with it.

There was no orange or lemon bloom this spring, as frost destroyed the foliage, and in many instances the wood. There is one tree in our garden that is now clothed with leaves to the very tips, while all the rest were killed to a few inches from the ground. An orange-tree will bear more neglect than any other tree, but can not endure severe freezing. The thermometer was down to 17 degrees above zero the past winter. A year ago the past winter I celebrated arbor day by planting an orange-tree. It was killed down, and never sprouted from the root the past summer. I utilized the spot, as it had been well fertilized, by transplanting a small peach-tree. To day on visiting the spot to look after the peach-tree I was surprised to find a small orange-tree, six inches high, which had grown from the root, after lying dormant more than a year.

MRS. L. HARRISON.

St. Andrews Bay, Florida.

QUEENS; THEIR MYSTERIOUS DISAPPEARANCE EXPLAINED.

On page 686, 1899, is an article from J. E. Gauger, stating that he lost about one-fifth of his queens, and you called upon your readers for help. Well, it seems that he and I are about all that have had such experience. I think, however, I know what became of mine. Early in the spring, when I first began to examine the condition of my bees, I found a queen on the under side of the cover, and it was by accident that I saw her. A little further on a queen was on top of the frames; and, when I smoked her a little to drive her down, she ran over outside. On another occasion I had some work to do with a very cross colony, and it took considerable smoke to subdue them. About an hour afterward I found the queen about a rod from the hive. Another time I was looking for the queen; and, after looking through the whole hive except the last two frames, I found her balled by the other bees. If I had not been hunting the queen herself, I would perhaps have had a queenless colony without knowing what became of the queen. On taking off supers I frequently found queens which might have been lost had I not been looking closely for them. I lost several queens, any way; but by learning early to be on my guard I saved many that otherwise would have been lost. I am pretty sure all the missing queens were lost in one of the above-named ways. It was by learning early in the spring to watch that my per cent of loss was not as great as was Mr. Gauger's.

Delray, Tex.

J. T. ETHERIDGE.



L. H. W., Mo.—A nucleus hive may be placed in an exhibition window in a store, without any entrance to the outside. The bees may thus be confined for four or five days or possibly a week; but it is better at the end of that length of time to give them a flight of a day or two, or, better still, change the bees entirely. If the entrance can be arranged so as not to interfere with passers-by on the street we would advise giving the bees communication to the outside. They could be thus kept day after day without any change.

T. R., Hawaii.—From the brief description you have given in your letter of the affected bees, we should say they have what is called bee-paralysis. We know of no cure for it; and if it once gets started in a warm country it is liable to be very destructive. We would advise you to remove all diseased colonies to a location where the bees can not get near any others. Destroy the queens of the diseased stocks, and introduce in their stead queens from healthy stocks. This may be the means of bringing about a cure. If this does not give relief you had better destroy the bees and combs, and boil the hives for an hour at least, to disinfect them.

M. W. M., Ill.—If you have a surplus of extracting combs or brood-combs filled with honey, and capped over, you will find these your best stock in trade. They are very useful in giving to colonies short of stores in the fall, in the spring, or even in mid-winter. Of course, if you have too many of them, and desire empty brood-combs to give to the bees, then we see no other way than for you to buy an extractor with which you may empty out the surplus combs. In an apiary of 100 colonies we consider 100 extra combs filled and capped over as the very best kind of capital. They save a lot of feeding, and are so handy that they can be used any time without discommuting the colony.

E. P., Ind.—During winter there is apt to be a good deal of dampness in the hives. It is caused by the fact that the inside temperature of the hives is much warmer than the outside; and as warm air holds in suspension a large amount of moisture, when it strikes the cold sides of the hives it condenses and runs down just as water condenses and runs down the sides of a pitcher containing ice water on a hot summer day. This condensation amounts to considerable—sometimes so much that the water will run out of the entrance. Ordinarily it does no harm unless this condensed moisture gets into the packing materials or cushions, causing them to be damp and soggy. All such should be removed and dried out the first bright day of sunshine.

J. R. T., Iowa.—For Italianizing the most economically by starting with one good tested queen, we would refer you to the plan mentioned on p. 32 of our catalog. You can not

very well raise pure Italians with common blacks or hybrids in the same yard unless you use perforated metal entrance-guards or Alley traps to kill off the drones of the black and hybrid colonies. For particulars regarding entrance-guards, etc., see p. 21 of our catalog, and also p. 32. If your neighbors have black or hybrid bees within a quarter or half a mile you will need to put entrance-guards over their colonies, for the bees will cross, even if the separate hives are half a mile apart, and, to a limited extent, even when a mile apart. For full particulars see "Drones," also "Queen-rearing," in our A B C book. There must be some mistake about two bees eating 2 lbs. of honey over winter. That is utterly out of the question. No doubt the man who reports it is honest, and believes it to be true, but he is surely mistaken. There are something like 4500 bees to the pound, and 3 lbs. to the colony. Such a colony will consume over winter, during the time named by your friend, not more than 10 lbs. of honey. According to this, 1 lb. of honey would support 1350 bees, so you can see that the statement of your friend is clearly out of all bounds of reason.

J. A. M., Pa.—Referring to the time it takes a bee to fly half a mile, gather a load of honey and return, I would state that it varies greatly. The flight of the bee going to the fields is about 15 or 18 miles an hour; and its return, if heavily laden, from eight to twelve. These rates will be varied a good deal according to the wind, and according to whether the bees are working on basswood or white clover. If on the latter, they might take, and probably do take, 20 minutes to an hour to gather a load and return to the hive. Experiments have shown that bee-loads vary considerably. Prof. Lazenby, of the Experiment Station at Wooster, O., has found from experiments that the average load of nectar carried by the bees is .022 of a gram, which is 27 per cent of the average weight of a bee, or a little over one-quarter of its own weight. If, on the other hand, the bees were robbing a neighbor's honey-can, half a mile away, they might go in seven or eight minutes, assuming that the average flight was at the rate of about a mile in five minutes. If the bees are gathering from basswood or some other plant where there is a large supply of nectar in a single blossom, the time might be about half that for gathering a similar amount from clover. Referring to your question as to when bees gather water in the spring, that takes place as soon as settled warm weather comes, and when the bees are at work on the pollen. The length of time on these trips, if they went half a mile, might aggregate anywhere from seven to ten minutes. These figures, except those from Prof. Lazenby, are not taken from actual observation, and timed visits, but are only approximate estimates based on bicycle-runs when I have chased bees up the road. I have ridden a wheel so much that I can form a pretty accurate idea of my speed, and bees will very often "take to the road" to avoid rising over shrubbery and trees when the pasture and the hives are in a bee-line with the road, as happens to be the case with our out-yard.



THE Brosius pure-food bill, a measure that is of vital interest to bee-keepers, is now in the committee of the House, and will probably be reported in some form in a few days. Mr. Abbott, our delegate from the National Bee-keepers' Association to the Pure-food Congress, requests that all bee-keepers write to their Congressmen, urging them to support the bill when it comes up for vote. Undoubtedly the glucose interest will have a strong lobby against it, and bee-keepers should help to offset this by writing at once to their Congressmen.

CANDYING NOT A PROOF OF PURITY.

AFTER the article by S. T. Pettit, on p. 340 was made up and in the forms, I noticed there was one very important matter which I did not refer to in my footnote; and that is, as to whether, when honey is "candied solid," it is "absolute evidence that it is pure." Taking this statement just as it stands, it is not; but if the statement is taken in connection with what I said on the same page, one will understand that glucosized honey will candy clear through the mass; but it has a very different appearance from pure candied honey. The greater the amount of glucose, the less the tendency to candy; and the greater the amount of pure honey in proportion to the adulterant, the more compact and sol'd the mass of granules. I agree with Mr. Pettit in all he says. This article is one of the best we ever received.

THE FOUR CLASSES OF SOILED SECTIONS.

DR. MILLER has already spoken of the confusion that seems to exist over the question of travel-stained, soiled, yellow, greasy, or water-soaked sections. All of these terms have often been confounded for one and the same thing. There are really four classes of discolored sections, each due to a distinct and separate cause. First, there is what is called the real travel-stained section. As its name indicates, the cappings are soiled because the bees have gone over the surfaces of the cappings with their dirty feet.

Then there is another lot that are stained because the boxes are capped over in the vicinity of old comb, dirt, or propolis. If the faces of such sections are examined carefully it will be found that the stain or discoloration goes *clear through*. These discolorations are due to the fact that the bees take up pieces of old black wax, propolis, or any thing that will answer as a substitute or filler for pure wax. I have seen the cappings of some sections of this sort filled with bits of old rope, lint from newspapers, small hard chunks of propolis, fine slivers of wood—any thing and every thing that is right handy. Sections of this class often look like those of the first class, hence the frequent confusion.

In the third class are those with soiled cap-

pings, due to pollen dust or possibly a thin layer of propolis stain. All such may be bleached white, as explained in our last issue, but the other two are hopelessly beyond remedy. All white honey with yellow cappings is apt to be in the third class.

The fourth and last class takes in all those that are called "greasy" or "water-soaked," having cappings that lie on the honey. The covering to each cell is more or less transparent, or water-soaked—the transparent part being half-moon shaped, or in the form of a ring encircling a white nucleus center that is not greasy or transparent. The general surface of such sections is mottled with little transparent half-moons or circles over many of the cells.

If the reader will look over the unsold odds and ends of the grocer's he will be able to find samples of all these classes, and it is a good time of the year to find them, as they are the last to sell.

LARGE HIVES AS NON-SWARMERS, AND ADAPTED TO COMB-HONEY.

It will be remembered that for years the Dadants, the well-known foundation-makers of Hamilton, Ill., were almost alone in the championship of large colonies in large hives, maintaining that they wintered better, gathered more honey, and were practically non-swarming. Some years later, having made some experiments that seemed to prove the value of large brood-nests, the editor of this journal had the audacity to say a few things in their favor. At the time quite a number admitted that, while they might be excellent for *extracted* honey, insisted they were not suitable for *comb*. But a few took the position of the Dadants and myself.

Very recently it was no little pleasure to read an article that seems to be quite in line with my experience on the subject of large versus small hives, by H. H. Hyde, in the *Progressive Bee-keeper* for April. From this article I have made the following extracts:

I am a large-hive man. I believe in strong colonies at all times of the year. Large colonies not only gather large quantities of honey, but also require much less work and attention. Now, right in line with strong colonies comes the importance of good prolific queens to fill the large hives, or barns, as some call them.

I wish to say that I was not a large hive advocate from the start; in fact, I have had it almost pumped into me little by little, for we (O. P. Hyde & Son) started with 8-frame hives, using one story, and now have 300 of our 500 colonies in 8-frame hives, but we have just that many more than we want. Still we make large hives out of them by giving the queen access to two or more stories, according to the number she can occupy. And, too, we run two-thirds of the bees in each apiary for comb honey during our first flow. This manipulation I have several times before explained, notably for last May and June.

While it is a fact that it takes more honey to run large colonies, it is also a fact that they will store much more surplus, very much more, than small colonies, even much more than proportion to the number of bees.

I have spoken of "Draper barns." It might be well to state to some of our later readers that these are nothing but ten-frame hives 2½ inches deeper than the regular standard Langstroth. These hives, also designated as "Jumbos," with deep frames, make very little confusion in the apiary, because they use the same bottom-boards, same covers, same sections, and same section-holders, that are used

in the regular ten-frame Langstroth hives; and such great cards of brood as one can get from these big frames!

It is but fair to state that these "Jumbos," probably, would not be adapted for some localities, and for some bee-keepers. Every one should experiment for himself on a small scale, and then, as results seem to justify, adopt that which will give him the most *money* (not necessarily honey) for the amount of labor and capital employed.

SALOONS DRIVEN OUT OF MARENGO, ILL., THE HOME OF DR. MILLER.

WHEN I called on Dr. Miller two weeks ago I happened to make my visit at just the time when they were in the midst of a campaign to oust the saloons from Marengo. It seems that that beautiful town, with its fine and modern churches and its large numbers of church-going people, was caught napping about two years ago, for the town went wet by the bare margin of just *two votes*. Some temperance people voted with the wets, thinking that a tax of \$1000 on the saloons would be practically prohibitory, and bring to the town some revenue. What was the result? In a year's time there were five saloons, all paying the tax, some of them having elegant bars, and all doing a big business. Young boys from respectable families were learning to drink; men once sober were becoming drunkards; bad debts were being made at the stores simply because the money had been expended for liquor at the saloons; brawls and fights were not infrequent on the streets, one man being killed recently; wines and liquors were being drank in private homes.

The Sunday that I was in Marengo I had the pleasure of being present at a meeting of some 50 or 75 business men who had assembled after a general temperance meeting to discuss ways and means to drive saloons out of the town that had been dry for thirty years previously. They seemed to feel that an awful calamity had visited the place, and that there should be an organization formed to vote the town dry at the election to be held April 17.

Being desirous of knowing the result of the vote I asked Dr. Miller to wire me if it went dry. This morning, the 18th, I received a message, dated yesterday, which reads as follows:

All three wards, no license. Hallelujah! Rejoice with me.
C. C. MILLER.

While this is somewhat aside from the subject of bees, yet as it relates so intimately to one of the most prominent bee-keepers of the world, I know our readers will be glad to hear of the result, and rejoice with him.

Sometimes good temperance people think it is better to have an open saloon or two, with a high tax, so the money can go to the building of roads, waterworks, or other improvements, rather than have speak-easies running on the sly, and get no revenue. In the days of no license, Marengo, I understand, had two speak-easies, but no boys could get any thing, and very few men, and these had to belong to the "mystic circle" in order to know how to "pull the ropes;" and yet the

cry was raised two years ago at Marengo that there was as much liquor drank as there would be if there were saloons in the town paying license; but the results have shown the utter fallacy of such a statement. It has proven true in every town where the experiment has been tried, and no one knows it any better than the saloon-men and the brewers and liquor-men in general.

BEES AND HORTICULTURE; THEIR RELATIONS MUTUAL.

THE above is the title of a pamphlet issued by the National Bee-keepers' Association, and edited by General Manager Eugene Secor, of Forest City, Iowa. The purpose of this pamphlet is set forth in the title summary as follows: "To put into condensed form, for the use of bee-keepers and fruit-growers, such information as is at hand, derived from experience and recent investigations, relating to the economy of nature in plant and insect life, and to show their mutual interdependence." It contains a digest of all the best articles that have been published, including the reports from government bulletins and experiment stations, all going to show the value of bees as distributors of pollen, thus making it possible to secure more and better fruit. It also takes up the question of spraying fruit-trees, when to do it, how to do it, and how to prepare the mixtures. It counsels fruit-men *not* to spray the fruit-trees that are in bloom; proves by plenty of evidence that doing it at such times is not only unnecessary but a dangerous practice, an injury to the blossoms, and often a misdemeanor.

On the last page or so there are given copies of the laws in several States, regulating spraying fruit-trees, especially those laws that make it a misdemeanor to spray trees while in bloom.

This, as I understand, is only one of the series of pamphlets that will be issued as time and money will permit and conditions demand, and will be used for the benefit of members.

The National Bee-keepers' Association, as Mr. Secor well says, was organized "for the protection of bee-keepers' rights and interests, and for the diffusion of knowledge pertaining to the honey-bee and its importance to agriculture and horticulture. It stands for the pure-food idea, and is ready to prosecute the adulterators of honey." The annual membership fee is only \$1.00, and yet as I look at it the Association, or what has been the Union, National and United States both, has been worth thousands of dollars to bee-keepers over the country. The old Union secured many valuable precedents in law to prove that bees are not a nuisance *per se*. The new Union began the work of fighting adulteration, one of the greatest evils that bee-keepers have to contend with at the present day and age; and I have already seen the salutary effects of the work of the Union, or Association, as we now call it. Its delegate to the Pure-Food Congress was appointed on important committees, and bee-keeping is now recognized as it never was before. I have already

referred to the fact that the Association in Chicago is already being regarded by the Chicago adulterators with a wholesome respect.

As the months roll on I believe bee-keepers will have great cause to congratulate themselves that so strong and effective an organization is doing such splendid work, and that, too, without a dollar of government aid or assistance from any State. Why bee-keepers, many of them, and progressive ones, too, are holding back their dollars, is somewhat of a mystery. The membership, if I am not mistaken, is a little above 500; but it ought to be 5000, and then, my, oh my! the adulterators would be scrambling to get out of its way. If they scramble now in some sections, what would they do if we had a larger membership and a larger financial backing? I have always spoken a good word for the Association, and I shall keep on doing so until the progressive ones see the advantage of pulling with their united strength.

STANDARD SECTIONS, AND THEIR AVERAGE RELATIVE WEIGHTS WHEN FILLED WITH HONEY.

THE same size of section when filled with honey varies in weight from year to year; but last year Dr. Miller found that the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ beeway ran a trifle under 15 ounces, or exactly 14.94; the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ plain averaged a little under 14 ounces, or exactly 13.83. It has been claimed that the $4 \times 5 \times 1\frac{1}{8}$ plain averages a trifle over 15 ounces, and, when well filled, an even 16. I was not a little interested in a comparison of the figures showing the cubical contents of each set of sections.

The $4 \times 5 \times 1\frac{1}{8}$, taking the outside dimensions, has cubical contents of 29.22.

The $4 \times 5 \times 1\frac{1}{8}$, 27.5 cubic inches.

The $3\frac{3}{4} \times 5 \frac{1}{2}$, 27 $\frac{3}{8}$.

But there is a greater difference in the ratio of the inside cubical contents because the sections are $\frac{1}{8}$ thick; and therefore to get the exact figures we should deduct $\frac{1}{4}$ inch from the perpendicular and horizontal dimensions—the thickness in every case remaining the same. The figures will then stand as follows:

$4 \times 5 \times 1\frac{1}{8}$, 24.5 cubic inches.

$3\frac{3}{4} \times 5 \times 1\frac{1}{2}$, 24.04.

$4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$, 24, even figures.

Understand that the figures given above are all for plain sections, which allows for $\frac{1}{3}$ of the bee-space being in the sections and $\frac{2}{3}$ of it in the fence.

Going back to Dr. Miller's data for the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ plain, we find that 345 such sections averaged up each 13.83 ounces. As the $3\frac{3}{4} \times 5 \times 1\frac{1}{8}$ has the same exact cubical contents within .04 of a cubic inch, we would naturally suppose that that section would hold the same amount as the $4\frac{1}{4} \times 4\frac{1}{4}$ plain, or a trifle under 14 ounces. I do not know now just where to look for it, but I believe some one has claimed that, notwithstanding the cubical contents of the two sections were the same, the tall box was a trifle lighter when filled with honey. This might be accounted for on the ground that there is slightly more margin in a tall box for the same contents than in one that is square. The more margin, the more shallow

or partly built, or uncapped cells, and hence a corresponding reduction in weight.

As the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ plain, according to Dr. Miller's figures, hold—say in round numbers—14 ounces of honey, and as there are 24 cubic inches to that size of section, then one cubic inch holds $\frac{1}{2}$ of an ounce of honey. But we could hardly use this ratio when we compare a square with a tall box, on account of the difference in the length of margin around the honey, although approximately it might give us a fair idea.

I have given this set of figures in the hope that our readers will weigh up their sections this summer, and then divide the total weight by the number of sections to get at the average. Furnish us with the sets of data so that we may know how these averages run in different localities and under different managements.

In the mean time I may call attention to the fact that the 4×5 is supposed to run more nearly a pound than any other section on the market, and yet it actually holds only $\frac{1}{2}$ of a cubic inch more than the $4\frac{1}{4}$ plain. If we add $\frac{1}{4}$ ounce to the 13.83 ounces, the 4×5 , theoretically, would hold just 14.12 ounces, which would make it considerably lighter than the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ beeway; but the actual results show that the $4 \times 5 \times 1\frac{1}{8}$ plain runs little heavier. It must be admitted there is somewhat of a contradiction between cubical contents and actual weights themselves in honey.

Why the $4 \times 5 \times 1\frac{1}{8}$ should average so much heavier than the $3\frac{3}{4} \times 5 \times 1\frac{1}{8}$ or $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ when there is practically only $\frac{1}{2}$ cubic inch difference is a little hard to understand, because we have figured that a cubic inch holds about $\frac{7}{8}$ ounce of honey.

A $4\frac{1}{4}$ plain by $1\frac{1}{8}$ holds a good plump pound, and we supply such sections to Geo. E. Hilton and others. To make the $4\frac{1}{4} \times 4\frac{1}{4}$ plain hold as much as the same section beeway, we should have to make it about $1\frac{9}{16}$ inch thick instead of $1\frac{1}{2}$; but in doing that we find a difficulty in getting six rows of sections in the ordinary super, and leave room enough for a fence on the outside of each outside row.

SNAP SHOTS FROM THE CHICAGO CONVENTION; QUALITY OF SWEET CLOVER HONEY.

Quite an animated discussion took place at one of the sessions in regard to quality and quantity of sweet clover produced in and about Chicago; for it transpired that a very considerable portion of honey produced in the city limits was of that kind. Some likened the flavor to vanilla; others thought it had a disagreeable tobacco twang. Some thought it an excellent honey, and others were very sure that it ought not to be put on the market as first grade; but nearly all agreed that a small amount of it mixed with other honeys was not detrimental but rather an advantage to the flavor.

I noticed in Colorado that alfalfa honey having a slight flavor of sweet clover was very pleasant and agreeable to the taste. Indeed, I formed a strong liking for it, and now try to keep it in the house as a choice tidbit for my bee-keeping friends.

It was developed, also, at the Chicago convention, that sweet clover is "awful stuff" if it is not thoroughly ripened; but when the bees have had a chance to manipulate it, and it is taken out of the combs good and thick, it was considered not unpleasant, although a little strong compared with basswood, clover, and other mild-flavored honeys.

ALFALFA HONEY NOT TAKING WITH THE CITY TRADE, AND WHY.

There seemed to be a general agreement that alfalfa honey—that which I have praised so highly in these columns, and which in my humble opinion I have classed as the finest honey in the world—did not take well with consumers, for the simple reason that they were in the habit of tasting clover and basswood; and if the flavor of these honeys were lacking, then it was declared to be nothing but sugar syrup. Alfalfa is so mild-flavored that a good many of the Chicagoans regard it with suspicion because it does not taste like the honey of their fathers. One dealer in the city, I found, was putting into alfalfa a small amount of strong-flavored fall honey; but this, for me, spoiled it, and yet it was done to give it a taste and twang that satisfy many consumers.

The general public has been fooled so much that it does not know what to accept as pure; and whenever honey is too mild-flavored or too strong or too something it is pronounced adulterated; and I do not know that we as bee-keepers have any right to blame them. The markets in Chicago have been flooded with adulterated goods, and no wonder the people of that town look with suspicion on almost every thing bearing the name honey.

ARRANGEMENT OF HIVES IN AN APIARY.

Quite a lively discussion arose on the arrangement of hives in the apiary. It transpired that a majority put one hive in a place; but Dr. Miller emphasized the importance of grouping the hives or placing them in pairs. It is his practice to put two hives on one stand, both facing the same direction, and the hives about two or three inches apart. Said he, The bees of one hive on a stand never get confused and go in the next hive on the same stand. If there is any confusion at all, it will be from bees going to the next stand in that hive that occupies the same relative position; but by placing one stand near a tree, and another one out in the open, and the next one near a bush, and so on, no confusion would be noticed. It was also pointed out that it was convenient to have two hives together, as a person could sit on one while he was working at the other, or he could use one as a sort of table or bench on which he could lay his tools, such as smoker, etc., while working the other.

It is our practice, when we can, to place five hives in a group. In this way we save a great many steps, and at the same time crowd a large number of colonies into the same space.

BALDRIDGE'S METHOD OF EQUALIZING COLONIES.

At one of the sessions Mr. Baldridge described his method of equalizing colonies—a

method I do not remember seeing described before; but Dr. Miller assures me that years ago a great deal was said about it. It is this: About six week after the bees have been set out of the cellar he exchanges the strong colonies for the weak ones; i. e., he places a strong colony on the stand of the weak one, and the weak one on the stand of the strong one; and although he says he has practiced this for many years he has never lost any queens, as one would naturally suppose he would after such a mixing of bees. The advantage of the plan is that equalizing strength of colonies is very quickly performed, and there is no general disturbance of the brood-nest.

But if I remember correctly it has been generally considered that the strengthening of weak colonies, at the expense of the strong, is not good practice, for the reason that it is the big colonies that really gather the honey; and unless they are up to a certain strength they will not do very much in the supers; and the consequence is, if all colonies are evened up in strength there will not be as much honey as if the strong stocks were allowed to have their strength and the weak were made to do the best they can under the circumstances. But this plan of Baldridge's may deserve at least a trial.

SPREADING BROOD CONDEMNED.

In this connection the question of spreading brood in the spring was considered; but nearly every one thought this a doubtful practice. While experts may do it with profit, the average bee-keeper was counseled to let it alone, as it is liable to result in chilled brood, and possibly foul brood, if the germs of it are in the yard or apiary.

THE CHICAGO JOINING THE NATIONAL.

At the last meeting of the Philadelphia convention a clause was inserted in the proposed constitution by which any local society, State or county, might join the National Bee-keepers' Association, on payment into the National treasury of 50 cents per member, *providing* that such members *went in a body*. It was urged by Mr. York, who proposed the insertion of this clause, that we could thereby secure more funds and more members—members who would not otherwise come into the Association; and so far the results in practice are as good as they were in theory. Quite a number of associations have already joined the National. At a meeting of the Chicago convention this matter was discussed quite thoroughly. Finally it was voted to join the National Association in a body.

This action on the part of the Chicago Association entitles all the members of that organization to all the privileges and benefits of the National, and at the same time they do not lose any of the benefits accruing from membership in the local organization. In the case of the Chicago Association the membership fee is \$1.00, and it would cost \$1.00 to join the National as an individual member; but by voting to join the National in a body, that same dollar extends their privileges to those of the National.



And he said unto them, This kind can come forth by nothing but by prayer and fasting. — MARK 9:29.

Matthew, in telling the same little story, tells us that Jesus answered his disciples by saying, "Howbeit, this kind goeth not out but by prayer and fasting." The latter form of the text is another illustration of how Jesus put much meaning into a very few words. Matthew, Mark, and Luke, all three tell this story about the demoniac child. Suppose we go over it. They had just come down from the mount of transfiguration. Peter, James, and John were the only ones that were permitted to be present on the mount. Matthew, Mark, and Luke, for some reason unknown to us, were left behind. When they came down and returned to these three there was a multitude gathered about them, and some were running. Finally, when the crowd caught sight of the Master they ran to him saluting him. He courteously asked the scribes what the trouble was — what they were discussing. It transpired that a father had brought his son to be healed of an evil spirit. You will remember that all of his disciples had been healing, and casting out devils, even when the Master was not present with them. In this case, however, there seemed to be a difficulty. The prince of darkness defied the disciples of Jesus. Satan was too great and powerful for them, and they were entirely helpless — at least Matthew, Mark, and Luke *thought* they were. They failed. The poor father comes to the Master and explains matters. He says, "I spake to thy disciples that they should cast him out, and they could not." Now, the Savior's reply is significant. He says, "O faithless and perverse generation! how long shall I be with you and suffer you?" All three agree in this statement substantially. I take it that he meant by these words, the three could have cast out this bold, defiant devil if they had only kept their faith, or, perhaps, obeyed the instructions he had previously given them; or, let us say, if they had really gone into the business *heart and soul* with a *determination* to succeed; and right here is where the whole point of my talk comes in to day. But let us first finish our little story:

He says, "Bring him to me." Luke tells us that he said to the father, "Bring thy son to me." Now a strange thing occurs. As soon as Jesus set eyes on the boy, Mark tells us, "Straightway the spirit tire him, and he fell on the ground, and swallowed foaming." Satan sometimes gets terribly desperate when he seems likely to lose his victim. In rescuing intemperate men and boys I have frequently seen cases where it seemed as if it were a hand-to-hand conflict with the Devil himself. The poor victim seems really penitent. He gladly takes hold of the hands of Christian people that are extended to help him, and, without question, *honestly* desires to break away from the toils of the evil one. We re-

joice that he has been rescued. Parents, friends, and Christian people gather round him; but, to our astonishment and wonder, all of a sudden the man turns about in a most inexplicable way. Some demon in human form has managed to get him to drink, or has persuaded him that we are *not* his friends. He drinks again and again, going to a lower depth than ever before, curses his rescuers, strikes his own mother, and, oh dear me! I need not tell you the rest of it.

While this poor boy was on the way to the Savior to be healed, the devil threw him down, and tore him. Now *another* strange thing transpires. Jesus asks, with infinite sympathy and love, for both parent and child. "How long is it since this thing came unto him?" The father replies that his son has been *afflicted* almost all his life; and he adds, "Ofttimes it hath cast him into the fire, and into the waters to destroy him."

Are there no such things nowadays, do you say? Some twenty years ago there was a man in our town who always tried to commit suicide as soon as he was under the influence of liquor. He had been rescued several times. The last time his wife found him in the wood-shed hanging by a rope, apparently dead. He was rescued, confessed his sin, and said he never thought of suicide unless he had been drinking. He came to prayer-meeting, and when asked to pray he replied he could pray in German, but he could not pray very well in English; and those who understood him said it was a most beautiful prayer to be saved from a devil that so constantly beset his footsteps. This was when we had open saloons in our town. We explained the matter to the saloon-keepers, and they all promised not to let him have a drop. When his "spells" came on he went to them repeatedly; but everybody kept it out of his way. Finally a low-lived fellow started a new saloon in spite of our remonstrances. It had not been running a week before this poor unfortunate slipped in and got some liquor. He borrowed a revolver, went and stood over the bank of the river, so that, if the bullet failed, the water would make sure. The saloon-keeper should have been tried for murder, but he was not. Public indignation, however, was so much against him that he could not make it pay, and quit. We temperance people were blamed for not telling him he must not sell liquor to Mr. H.

Dear friends, how much difference is there between the two cases? With the boy, Satan persuaded him to cast himself into the water or fire to destroy him. With the man I have been telling you about, the evil spirit suggested to him to take the revolver and the river both, so that meddlesome people could not prevent him from — what? I do not know but our whisky-dealers would say, from restraining his liberty of thought and action.

At this exhibition of Satan's power the poor father says, "If thou canst do any thing, have compassion on us and help us." Why, my dear friends, while I am dictating these pitiful plaintive words my voice shakes with emotion, and I can scarcely keep back tears. The poor father, in his despair, feared even Jesus

himself could not cast out this stubborn spirit. Jesus says, "If thou canst believe, all things are possible to him that believeth." You see it was want of faith from beginning to end. It was this feeble half-heartedness—the unwillingness to accept the evidence all round about them, or, if you choose, all round about us, of "the Lamb of God that taketh away the sin of the world."

The poor father's touching reply has come down through the ages. Even Daniel Webster, not long before his death, when he accepted Jesus Christ as the Son of God and his Savior, said, repeating the words of this poor father, "Lord, I believe; help thou mine unbelief."

When it was noised abroad that the Savior himself had tackled this evil spirit whose work they had witnessed for so many years, they came running together. Matthew and Luke tell us he rebuked the devil. How much that word "rebuked" expresses! Mark alone tells us just what he said. "Thou dumb and deaf spirit, I charge thee come out of him, and enter no more into him." It was as if you should tell some one who had insulted you grievously in your own home, "Get out of this house this instant, and stay out." Matthew says the child was healed from that very hour. But Mark tells us that even the presence of Christ, the Son of God, was not sufficient to check the *awful* audacity of the prince of darkness. He says, "The spirit cried and rent him sore." I can imagine the demon uttering a shriek, and doing his best to finish up then and there what he had long been working for; for Mark adds, "And he was as one dead, insomuch that many said, He is dead." And who shall say he was not dead? for Mark adds, "But Jesus took him by the hand, and lifted him up, and he arose." Jesus restored him to life exactly as he lifted the damsel but a short time before, as she lay on her bed a corpse. Satan had evidently forgotten Jesus could bring back to life even one who had passed through the portals of death. Luke says, "And they were all amazed at the mighty power of God." We can imagine the disciples standing about, timid and trembling. We know they were a little afraid of the Master. Perhaps it was only a reverential godly fear, however; but in this case remembering, probably, what he said when they first told him they could do nothing with the evil spirit, they waited until he had gone into the house and sat down, then they gathered around him and said, "Lord, why could not we cast him out?" Matthew and Mark use the same words. Mark gives us simply the words of our text. But we are very glad that Matthew remembered something more that he added to make it plain. He replied, "Because of your unbelief. For verily I say unto you, if ye have faith as a grain of mustard seed ye shall say unto this mountain, Remove hence to yonder place, and it shall remove; and nothing shall be impossible unto you."

Dear friends, perhaps I had better be honest with you and tell you plainly that this last quotation has always been something of a

stumbling block to me. It seems to my poor human vision that the dear Savior exaggerated—that he put it *too* strongly. A grain of mustard seed is an exceedingly *small* thing; and then, again, a mountain is an exceedingly *large* thing; and, finally, nothing shall be *impossible*. Why, it makes me think of Francis Truth (begging pardon for the illustration) when he announces in the magazines and the eastern papers that there are now *no incurable diseases*. Thank God, I do not need to argue now that Francis Truth was a bad and wicked man. When Uncle Samuel got hold of him and revealed his iniquity, everybody gave up. Let us now consider the text a little.

I like Matthew's version of it, especially after what he had said about the mustard seed, the mountain, and impossibilities. Matthew tells us that Jesus wound up the subject by saying, "Howbeit, this kind goeth not out but by prayer and fasting." The word "howbeit" is particularly expressive; and the words "this kind" are suggestive. He admits for the encouragement, or at least I think it might have been some encouragement to them, that this *was* really a particularly hard case. The demon had got so entrenched into the heart and soul of the boy, and had been there so many years, he had become saucy, impudent, and overbearing. He even attempted to defy the Son of God himself.

"This kind!" Dear friends, are there any of "this kind" present in this day and age of the world? When the Clark local-option bill was defeated at Columbus, Mrs. Root said, "Why, how can it be that God permits such awful wickedness?" or some such expression. Others voiced the same thing. The daring and effrontery might well suggest, "Does God reign, or has Satan gotten the upper hand of every thing?" The *Daily News and Herald*, of Cleveland, O., says:

The liquor vote in Ohio is estimated at thirty thousand. On the other hand, the Anti-saloon League, which is actively supporting the bill, has an active membership of about one hundred thousand, and the total church vote in the State which will be influenced by the defeat or passage of the Clark bill is estimated at nearly 250,000.

It ought not to take one who simply looks at the political side of the question long to decide whether it would be better to serve the thirty thousand liquor voters or try to please the quarter of a million church voters.

There is no good reason why the Clark bill should be opposed. It provides an eminently fair way of leaving to the people the decision of the question whether liquor shall be sold in the wards of cities, and no man who believes that the majority should rule can object to its passage.

I think the above is about the truth of the matter. What in the world *is* the matter of the 100,000 Anti-saloon people and the 250,000 church members, or church-member voters, if you choose. As to that matter of fasting and prayer, has that any thing to do with it? I do not understand that we are really to go without regular meals two or three days, and spend our time in prayer; but I think the expression means now and did "hen, that when we care enough about defeating Satan to go without our meals rather than let him *run rampant*, then we shall prevail with God. We have done praying enough, perhaps, of one kind—may be too much. But there is another

kind that some of us know but very little about. Dear friends, I know *something* about the other kind, for I have had some experience. Perhaps we all or the most of us have regular times for prayer. That is well and good; but if when we pray our mind is on something else, and we repeat the same things over and over, it is not much wonder that God neglects to hear and answer. In fact, we hardly expect an answer of any sort; and this explains why the Savior groaned and lamented over man's unbelief. We have it in the beginning of our story, and we have it in the end. You set the children to doing something. They will come back and say they tried, but could not do it. The good parent says, "Oh dear me! I am sure you did not *half* try." Perhaps the children want to do something else, or do not *feel* like it. They do not *want* to succeed very bad. That would be a little rough on the temperance people of Ohio, but I am afraid it is true. There is half-heartedness all along the lines. Why, my quotation from the daily points it out and emphasizes it.

Now, Matthew, Mark, and Luke did not half try to cast out that demon. Their sympathies were not sufficiently aroused. They did not care enough about the boy or his father. The Savior was away somewhere, and I do not know but they felt a longing to go fishing or do something else. They were at fault or he would not have rebuked them as he did. I am in the habit of praying two or three times a day; but if I do not look out a good deal of it is half-hearted prayer. I am afraid I do not do much real praying until Satan gets squarely in my way, and will not let me by. Then comes prevailing prayer. A great part of my life I have lamented that I was so constantly hampered with an impatient temper. But this very impatient spirit calls out the real prayer. Just two days ago Satan stood squarely across my footpath. He kept urging me to use my authority, but I knew it was not best. He planned what I should say and what I should do, and pictured out what the *result* would be. He said I was not a *man*—had not the respect of *anybody* unless I did as he suggested. His evil suggestions followed me. I could not get the matter out of my mind. It was time to write my Home Papers, and I was not in a right spirit for it. I walked over to the greenhouse. Nobody was near, and I could pray out loud. But he did not give up. He followed me as he did that demoniac child—he would not let go. I *wrestled* in prayer for the sake of the loved ones at home, for the sake of harmony and peace in the busy workshops across the way. I begged for deliverance. I besought the dear Savior to give me the victory. Like Jacob of old I wrestled not in vain, and then came peace, harmony, and tranquillity. That was *real* prayer. Something was really accomplished, as much as if I had been fighting fire.

One morning last winter I came over to the office and opened a great valve to let the steam into the pipes that run through the building. The valve had never been screwed down securely to the seat. The whole top came loose, and the pressure of the steam raised it up a

little. I put my whole weight on it, and thought first I could not get it back into place. If I let it get away from me I should be scalded before I could get out of danger. I was battling against the pressure of the steam. If I could just make the threads catch the least bit I could get it back into place. It was so early in the morning nobody was near. I became excited and nervous; but by exercising a little ingenuity, however, I managed to hold back the imprisoned power, and finally got the valve back in place. I "licked," but the tussle made me weak and faint. I felt the effects of the fright and fatigue almost all the forenoon. Now, an ungoverned temper that threatens to break loose is a thousand times worse than confined steam. It *must* be kept back *out of sight* at all hazards. Just turn this *force* into wrestling prayer, and then let it go loose—it can do no harm?

Ernest has told you in another column what faith and whole-hearted work did in Marengo, Ill. I have told you already about the fierce fight we had to keep the liquor-traffic away from Chippewa Lake, four miles from Medina. The enemy had their plans so well laid that they boasted we were helpless; but the good men and women of Medina, including the teachers and all our ministers, waked up to the importance of the matter as they were never waked up before, to my knowledge, and arose in their might. We gave the rum power an *overwhelming* defeat; and I said at the time if that same crusade were kept right up it would clean liquor-selling clear out of our county. Why, there is not a question in regard to it; and when the county is made clean, a like crusade of all temperance people would clear the State of Ohio, and Ohio ought to give other States of the Union faith and courage to let temperance rule under the stars and stripes, instead of intemperance; and finally the temperance banner could be unfurled so as to float over the *whole wide world*. Our text tells us what the trouble is, and why God does not rule instead of Satan. Jesus' followers are not willing to fast for the cause. I am really afraid some of them are not willing to forego *intoxicating drinks*. We want more *wrestling* in prayer against the encroachments of the evil one.

And now as I finish, a new beauty radiates (at least to me) from that brief little text: "Howbeit, this kind goeth not out but by prayer and fasting."



EATING BETWEEN MEALS, AND THE WAY IN WHICH IT MAY IMPAIR DIGESTION.

Mr. Root:—I am glad you have discovered the great pleasure there is in growing flowers. I have often thought that you must be color-blind, or else looking too high and far away, or you would discover these shining lights which are really many times right under your feet. I think you will not only find great pleasure but health among the beautiful flowers. Nice vegetables and fruit are nice (I always have an abun-

dance), but they are dangerous things for a man in your condition to have around him except as they are dealt out to him by the judicious one at the head of the household. This may seem strange, but I believe it true.

For years your very surroundings have been just what the microbes of fermentation delight in having their victim in—plenty of vegetables, fruit, and sweets. I tell you, it is hard to see great crimson strawberries with their background of green, and not eat some of them before one gets out of the patch, and it is this eating of such things between meals that keeps up acid fermentation in the stomach more than what one eats at the regular hours. For instance, suppose you are getting along very well with the breakfast, very little signs of trouble, when you find some nice maple syrup to sample, or honey, or beautiful berries or other fruit. One eats a little of one or more of them, and feels but little if any the worse for it; but that is just where the danger lies. At this time the morning meal is nearly passed out of the stomach; but little remains, and that will be the coarse or poorly masticated part, such as bits of potato and fruit in which fermentation has nicely begun, yet would, with a drink or two of water, pass through the pylorus into the intestines, and cause but little trouble; but at this time if one adds to these little bits of fermenting food a few spoonfuls of sweet or other food which ferments quickly, trouble is bound to come—not so much noticed at that time, or for some time after, but before night. It is good deal like putting a cup of yeast into a barrel of beer or any thing one wants to ferment. The yeast is weakened, or diluted, at first; but just wait a little while, and it will make its presence known.

But, to go back to our victim, we find that at 10 A.M. he has added to the little yeast cakes—pardon the comparisons, but that is about what they represent—a few ounces of sweet and a drink of water (not enough to reduce the sweet to a less than two-percent solution); this makes a good batch of yeast, and by dinner time it is in fine trim. Now for the dinner, it matters not what it be; unless the meal is entirely of lean meat or eggs, there is now in the stomach so much of this yeast-like stuff that its acid will destroy the effect of the alkaline secretions—if they haven't already become acid; digestion is stopped, and the victim filled with gas until he can do but little until the whole mass has had time to pass off, which it may not do before another addition is made in the shape of a supper, and so on from day to day, the curse being laid on the food taken at noon, when it should have been on the small bits taken between meals.

Doctors have, in my mind, done a great deal of harm by advising such patients to eat little and often. Better eat a fair meal, and then give it time to pass thoroughly out of the stomach before more is added. I have been through the mill, and I think one can do more for himself than any other man can for him. I will tell you why I am so sure that what I write is just about the facts, in cases of acid fermentations of food in the stomach.

For years I have (the cause unknown to myself) been in poor shape to do any thing. Why, I could hardly bend myself over a hive or do other work; short breath, hard rapid beating of the heart, sensation of pressure on eyes, and dizzy headache, restless nights, lying for hours in a cold sweat, and—well, you know the whole train of distressing conditions better than one can tell you. I will tell you how I obtained relief—that is, temporarily. I drank freely of warm water until I threw up what was in my stomach; and even though it had been there four or five hours it was as swallowed except that it was so sour it made my throat sore for over a week. But I felt like a new man right straight off. I then drank a great lot more, but took soda with it, and thoroughly rinsed my stomach, and soon threw that up also. It was then that I knew my real trouble, or, rather, the cause of it. I could not bend over, because I was so full of gas—yes, that's just what I mean, and you may just as well laugh as not. It also prevented me from taking a full breath, made pressure on the heart, and a sense of fullness in the eyes and head. My system was filled with acid, so I could not keep warm without a load of clothes. After getting such relief from one treatment I began in earnest to try what I called a new thing. You have advocated thoroughly rinsing the bowels with water; but I believe the stomach is what needs the washing. For about four months there were but few days when I did not thoroughly wash and cleanse my stomach. First, half a teaspoonful of soda in half a glass of warm water is taken to sweeten the contents of the stomach so as to prevent strangling and sore throat in case there is much acid.

Then drink a quart of sloppy warm water; and as the last swallow is going down, a little effort will change its course, and the whole mess will come up. I usually repeat the operation once or twice, or until the water comes up as clear as when swallowed. At first it may be difficult for some to do this; but I think that, with a little effort, any one can. This, with attention to some other little things as regards eating and what one eats, have done for me what doctors have failed to do.

CHESTER A. OLSTEAD.
E. Bloomfield, Ont. Co., N. Y.

Friend O., I think yours must be an extreme case. I have had some such experience. Is it any wonder that people have sick-headache when their digestive apparatus is charged with stuff so foul that it scalds the throat in throwing it up? Soda and various alkaline lozenges sometimes give temporary relief; but I think your remedy is more likely to go to the bottom of the mischief and build up good digestion. Why, it makes me think of the recent exhortations in the agricultural papers to the friends who make maple sugar—I mean in regard to giving their sap-kettles and other utensils a frequent and thorough cleansing with boiling water. It is a pity if we can not take as good care of these bodies of ours as the sugar-makers and milk-men do of their pails and cans. Your article is certainly an excellent supplement to our water-cure tracts; and I think that hereafter we shall have to incorporate it in with them.

Let me digress a little to say that one of our subscribers sent me an advertisement of a wonderful discovery called "Nature's Own Cordial." The proprietors charged a dollar for the formula. Our friend wanted to know if I would advise him to send the dollar. I said, "No, no! We will send the dollar and then give it free to all the readers of GLEANINGS." Here is the dollar formula:

FORMULA FOR NATURE'S OWN CORDIAL.

Oatmeal, $\frac{1}{2}$ lb.; pulverized charcoal, 1 oz.; pulverized slippery-elm bark, $\frac{1}{2}$ oz.; ground cinnamon, $\frac{1}{2}$ oz. Put the oatmeal in a shallow pan, and brown in an oven. Do not allow it to scorch or burn.

The charcoal as well as the slippery elm and cinnamon can be purchased already pulverized.

Mix these ingredients thoroughly, put in a sealed jar, and keep in a dry dark place.

After abstaining from food for two days, take two teaspoonsfuls of this mixture in a cup of hot water before breaking your fast. Thereafter take one teaspoonful before each meal in half a cup of boiling water. Do not attempt to masticate this preparation thoroughly. It should be moistened with the salivary fluid just sufficiently to swallow with ease.—*Secular Science and Common Sense*.

No doubt the above, in some cases, will be beneficial. First, the patient is to fast until his stomach is thoroughly cleansed. The roasted oatmeal would then furnish a wholesome nutrition, and may be the slippery elm would help it some. The powdered charcoal will absorb the gases and cleanse the stomach and intestines; and the cinnamon, I suppose, would make it palatable. Some people urge that if a thing like this is put in the papers nobody will bother himself to try it. If the recipe or secret costs the patient a dollar (or five) then he would be sure to procure some of the stuff and take it according to directions. But even granting this to be true, does it make it right to charge your neighbor a dollar for something that can be written or printed on a postal card? A dollar ought to buy a pretty

good-sized doctor book, and one that comes from good authority.

ABSENT-TREATMENT HEALING, ETC.

It does me good to see you still after the humbugs and swindles; and I often think it is a burning shame that influential and apparently respectable and honest papers will, instead of crying down these scoundrels, sell them advertising space; and I sometimes really wonder if a large part of the hard-working people are going crazy. And now I want to tell you of a case in this county. Magnetic healer No. 1 (I will call him) went to *Nevada, Mo.*, a few months or weeks, and "learned the trade," and, for a consideration of some kind, taught it to healer No. 2. Both are making some wonderful cures, according to reports. No. 2 had an accident and hurt his arm. He supposed he had sprained it, and went about with it for several days. One day he complained to a gentleman who is a doctor by profession, but has not practiced for many years. Healer No. 2 said he could take away the swelling by his own treatment, but it would return. The doctor took hold of his arm, and discovered at once that one bone of the forearm was broken. He said he could easily feel the broken parts grating together. How would you like to take the "absent treatment" from a man who does not know it when his arm is broken?

S. E. MILLER.

Bluffton, Mo., April 11.

We have a healer and a school here. The magnetic healer, Mr. Yates, says Weltner, of Nevada, Missouri, takes in as high as \$2200 a day. They have about 60 typewriters. They say about one in ten healers who graduate practices. They work through the will and imagination, and wonderful cures take place. It is the life principle which cures, and not medicine, so say scientific men. This explains why quack doctors, Electropoise, magnetic, little potatoes in the pocket, Christian science, electric belts, mesmerism, and all such, have equal success, and all the patent medicines, and many doctors. One drug clerk told me they had for years sold goose grease, skunk oil, etc., out of the same jar. It works just as well.

Shenandoah, Iowa. O. H. HYATT.

Why, old friend, you started off quite scientifically, and I was reading your letter with a long sober face until I got down to the concluding sentence; but where you drop so suddenly from the sublime to the ridiculous we had a big laugh over it all around. Now, in justice to our readers permit me to add a postscript to the above letter that contains a great truth, and a great truth that covers this whole business:

The world has been hypnotized by the Devil since the time of Eve, and only Jesus himself can break that spell.

A NEW PORTABLE ELECTRIC LAMP.

I have from time to time, as you may know, described important improvements as they came into the market for a portable electric lamp. Just now we have something ahead of any thing that has heretofore appeared, especially where you have electric lighting in your home or place of business. Of course, the lamp can be used where there is no electric plant; but, in this case it must be run entirely by cheap batteries. As a storage battery it weighs less than any thing heretofore put on the market. In fact, the little lamp I am using to visit the greenhouse after dark, to look at the barometer, to go into the barn or warehouse, where I do not wish to take an oil-lamp, etc., weighs only 1 lb. all complete. This is not a dry battery; and, in fact, the great objection to the dry batteries is, they must be used within a certain period or they

are no good, as some of the friends have already discovered; and when you want to replenish your dry battery, you have got to get a new one; and where they are sent by mail or express, the transportation costs more than the battery itself. Well, this new electric light is run by a battery costing at first 35 cents.* This will run a little lamp nicely for about ten hours, either as a flash light or as a continuous light; and you may take a month or two to use up the whole ten hours if you choose; but after the battery is run out, or, in fact, before it is quite run down, it can be cheaply renewed. We have given these lamps to our night watchmen, and to men in charge of the warehouse, where they have to look into dark corners in handling goods, and anywhere else where an oil-lamp or lantern might otherwise be used. These lamps will not set any thing on fire, and therefore enable you to dispense entirely with matches and oil for lights.

When Benjamin Franklin flew his kite, and charged a leyden jar, the world said he had bottled up the lightning; but Franklin did not live to see lightning bottled in such a way as to use it a little at a time for lighting up dark corners. This latter achievement seems now to belong principally to the United States Storage Battery Co., 253 Broadway, New York, to whom you can write for prices and full particulars in regard to storage batteries and portable lamps. They promise to send me an improved bicycle-lamp in a few days, charged in the manner specified. When they do I will tell you about it.

There is also another similar apparatus, made by the Vesta Accumulator Co., 53 Dearborn St., Chicago, but it weighs quite a little more; and this latter battery, when charged with liquid, is really a regular storage battery, and will give a light continuously for two years or perhaps more. It can be stored by attaching it to the socket where any electric bulb is attached; and it receives a charge in 10 or 12 hours to give a very good light for 12 to 15 hours. Either firm will furnish you full particulars in regard to these new portable electric lights. When I wish to go out after dark on my wheel in a hurry I just pick up the electric lamp we use at our bedside nights, for a flash-light to tell what time it is. This lamp is so light I can just hang it on the handle-bar, or even carry it in my hand. The latter method is rather preferred, because I can easily direct the light on any spot I wish in passing or in turning it toward a vehicle coming my way. I very much prefer such a lamp, all complete in itself, to one where the battery is one thing and the lamp another thing, the two being connected by wires. In this age of hurry we want something we can pick up and turn on the light by touch-

* These cheap batteries are packed in a box, the liquid being securely put up in a bottle; and in this shape they can be kept months or years without any deterioration until you want to use them. When required, the liquid is poured into the battery. Then it is ready to be put into the lamp to give light as above. These batteries can be shipped at small expense by freight, and kept till required for use. It makes the whole apparatus more practical than any thing we have had heretofore.

ing a spring, quicker than you can scratch a match; and the arrangement I have described above is of this kind.

THE NATURAL-HEN INCUBATOR, ONCE MORE.

I should have mentioned in our last issue (see page 322) the fact that the Natural-hen Incubator Co. promptly returned the dollar I sent them, as soon as they received my letter telling them I thought they ought to furnish a fair-sized book for the dollar instead of information that was all contained on a single sheet of paper; and I have since learned that Mr. Seims is or has been a bee-keeper. He says he returns the money to everybody who is dissatisfied, and I have reason to believe he does. But even though he does, there is something about the business that is not quite straight—at least that is the way it looks to me. From their letter-head I quote the following :

Our agents make as high as \$5 to \$15 a day. Exclusive territory granted to canvassing and general country agents.

I make no objection to agents getting \$5 to \$15 a day. A good agent *may* do this in selling agricultural machinery or perhaps beehives (in the latter case, however, he would have to be a "hustler" if he furnished goods at regular prices). But how about the "exclusive territory"? There is not any patent on the device, and I do not see how agents can sell these pieces of paper for a dollar apiece unless each purchaser signs a contract not to show it to his neighbor. But even suppose he does this, the apparatus must be set up outdoors, and the neighbors would naturally call around to see how it works. What is to hinder them from going home and making one like it so long as there is no patent on it? The Incubator Co. gives no deed of "individual right." They simply furnish a piece of paper, with the picture and directions on it. I think there is a stamp across the picture, saying, "Patent applied for." But how can there be a patent on any thing that has been in use for "ten or more years," and is pictured and described as free to everybody in our agricultural journals—see page 322 of our last issue, above referred to?

Now, even though their customer gets his money back if he is not satisfied, is not the whole thing worked in a way to obtain people's money unfairly?

any crop of rye I ever turned under. Have you people ever made any experiments with wheat as a green crop to turn under for growing potatoes? and can you tell us about what time to turn under either wheat or rye to give the most advantage to potatoes? With our late crops of potatoes we can turn the wheat under at any stage, even when it is headed and filled with grain. You may say this would be extravagant manuring; but how much more extravagant than to turn rye under when it is well headed out? Of course, we can get a good crop of rye here after we dig our potatoes, which would not be so with wheat (in place of rye) so late in the season. Where wheat falls down badly, it can, many times, be turned under and potatoes put in.

Prof. W. J. Green replies as follows :

Mr. Root :—Regarding the comparative value of wheat and rye for green manure, I can give you no information. I have turned under rye a number of times, but I have never practiced this method with wheat, nor have I heard of any experiments along this line. It is possible that the success in turning under of wheat in your case is due to some other circumstances and conditions. It is well known that, in turning under a green crop of manure, much depends upon the weather soon after, as well as the condition of soil and the quantity of straw turned under. If the weather should prove to be very dry soon after the plowing is done, it may happen, and often does happen, that a heavy crop of any kind turned under is injurious to the soil for that season. This is for the reason that the crop just turned under holds the soil loosely, causing it to dry out much more than if the crop had not been turned under. If, however, a heavy rain comes soon after the plowing is done, so as to rot the crop, then the larger the quantity of straw turned under the better. I can not see that there can be very much difference in value as a fertilizer between wheat and rye; but rye is commonly used because it can be grown later in the season than wheat, and, as a general thing, it produces more straw than wheat. I am of the opinion that it is better to turn rye under before it gets to its full height than to wait until it is nearly ripe. This is because of the danger above stated of dry weather occurring soon after the crop is plowed under. Perhaps you know that it is now believed by many, that, where rye is turned under for potatoes, there is likely to be no potato scab. It will be interesting if you will note the effect of the wheat on the scab.

Wooster, O., Aug. 8.

W. J. GREEN.

STRAWBERRIES, CORN, AND BUCKWHEAT ALL IN ONE SEASON.

Strawberries are blooming here finely. I have five acres of fine berries. I grow my berries in half-matted rows. I set them out year before last, the first of April, and the first of June (last year) I planted corn between them in the row, one stalk in a hill, and made 50 bushels of corn to the acre. I laid it by the first of August, and sowed it in buckwheat that grew waist high to me, and I am a six-foot man. It is all right to grow corn in strawberries if you let the latter get well rooted before you plant the corn. I made 100 crates of berries to the acre.

S. M. CAMPBELL.

Mountainburg, Ark., Mar. 28.

If I am correct, the above is quite practical, probably, in many localities. The ground is so well manured for the strawberry crop that corn will grow without any trouble, even without plowing up the ground. The corn is to be cultivated, I take it, as usual; then at the proper time get your buckwheat in between the rows of corn. Get off your corn without injury to the buckwheat, and you are all right for the three crops in one season; but I think our good friend C. must make his ground pretty rich in getting his crop of strawberries.

FLOWERS AROUND THE HOME.

How I should enjoy a visit to that greenhouse! I am a great lover of flowers. I have had poor health for years, and many times have worked in my kitchen till I was so tired it didn't seem as if I could do any more work; but when I got to the sitting-room and looked out at my lovely flowers I could not resist the temptation. Out into the yard I would go, and go to pulling weeds. The fresh air and all the loveliness of this beautiful world our heavenly Father has given us

TURNING UNDER WHEAT INSTEAD OF RYE.

Last season I had excellent success with a small plot by turning under wheat instead of rye. I wrote to our experiment station about it as follows :

By accident I turned under a heavy growth of wheat instead of rye last spring, and from one experiment the wheat seems to be worth ever so much more than



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to enjoy made me forget for a time my weary frame. Yes, you may thank God for this new pleasure; for if there is nothing else visible it is a blessing—at least it is to me. When I see people's yards destitute of flowers, and no vines about the porch or windows, I almost pity them.

MRS. N. C. DOZIER.

Ashland, Oregon, Mar. 28.

THAT LITTLE GREENHOUSE.

I remember seeing, some years ago, a man going around town with a wagon, selling plants; and I especially remember something he called *cineraria*. Seeing them advertised for a small amount in the *American Florist* I sent for half a dozen, assorted colors. I think the price was a dollar a dozen. Afterward I saw some smaller plants advertised for about 4 cents each, and I ordered 25. Well, now they are just getting well in bloom, especially the larger ones. I have been trying to think of a word that expresses what the *cineraria* looks like; and the word "animated" comes the nearest to it. It has such a sprightly, vivacious, almost *coquettish* look, that some mornings when I go out to the greenhouse for the first time I almost feel like shouting. I can imagine the beautiful blossoms with their startling bright colors speaking, if not in words, in a way that flowers do speak, "Mr. Root, a'n't I pretty?" Then another one says, "Mr. Root, a'n't I pretty?" And then the third one says, "And what do you think of me?" Then one of the smaller ones peeps out of the foliage and says, "Well, I am a little different, as you see, from any of the rest; but don't you like me *too*?" Well, it is so early in the morning that nobody else is around—possibly about five o'clock, and I can talk to my posies without any fear that somebody will overhear me, and think I am out of my head, or something of the sort; so I reply, "Yes, yes, you precious little darlings, you are all handsome—every one of you, and I thank you from the bottom of my heart for trying so hard to please me and give me pleasure. May God be praised that he has seen fit, during the latter years of my life, if not before, to 'strew flowers along my pathway,' and also to open my eyes that I might see them."

I have one bed made up of *cinerarias* and *pelargoniums*. The foliage is considerably alike, but the flowers make a very pretty contrast. By the way, I found a *pelargonium* belonging to a lady not a hundred rods from the greenhouse. It is, perhaps, two feet high, and nearly two feet across, trained on a trellis, and just covered with those beautiful entrancing blossoms. She says they call it "apple-blossom geranium."

Well, there is another of the geranium family that is giving me great pleasure. It is the ivy-leaved geranium. I have noticed these, but I did not know before they furnished such great masses of beautiful bloom. A friend gave me a slip last fall, and now it is three feet high, and bigger than a barrel. It is trained around one of the iron posts in the greenhouse. When I saw great quantities of buds coming out along in March I thought possibly it would be some small insignificant flower. But the blossoms are large and very

handsome. Our good friend Pike sent me some rooted cuttings of ivy-leaved geraniums. Like all the rest of the posies there seem to be ever so many different varieties. These were named "the Bride," "Joan of Arc," and so on; and to my surprise some of them are covered with buds while yet in thumb pots. Is that a modern invention among florists—getting plants to blossom when they are hardly anything more than rooted cuttings? Besides, the ivy-leaved geranium is about the easiest thing to make grow I ever got hold of. It is not only easy to start, but it keeps growing, and grows "out of sight," as the expression goes, almost before you know it. I have not learned how to make *every* thing grow yet, by considerable. My roses have bothered me greatly. The leaves turn yellow and drop off, then they die. I am sure they are not too wet nor too dry, and I do not believe they are too warm. About half of them are blooming most beautifully. I put the sick ones outdoors to see if the open air would not cure them. They are in a bed, so if there should be a frost I can put the sash over them.

Both of my ginseng plants started in the greenhouse are dead. Perhaps I should not have put them in the greenhouse at all. I sent and got some more, and part of them are growing, and the other part started all right; but the leaves get moldy, and the plant rots, root and branch. I really hope other folks get along better, for ginseng is a pretty expensive plant just now to have die on your hands.

BRAN FOR BEES.

Our neighbor across the way, a grain-dealer, got in a carload of bran in bulk; and on this beautiful 16th day of April they began shoveling it up to store it in their warehouse. But the bees from our apiary just across the way, in consequence of the cold March and April so far, were lacking in pollen, and they pitched into the bran with such vim that the men who were shoveling beat a retreat. Why, it made one think of a leaky carload of honey, only the bees seemed to be very happy and civil in their rejoicing over their big find of pollen. I got one of our biggest wheelbarrows, loaded it up with bran, and wheeled it out into the apiary as a "counter-irritant;" I think that is what the doctors call it, don't they? Well, just now (about 3 in the afternoon) it makes me feel like old times to hear the bees humming and rejoicing over that big wheelbarrow full of bran. I tipped it up edgewise so the coarser particles would run down over the side, and that seems to be just the thing to suit them.

THE FAMINE SUFFERERS OF INDIA.

As some inquiry has come in in regard to how this money is sent, and how much of it is given for salaries, and the expense of sending it to the sufferers, I have asked the treasurer of the American Board to give a brief statement, which I take pleasure in submitting:

Dear Mr. Root:—Your favor of April 7th is received.

and in reply to your inquiry I am pleased to make the following statement:

The American Board and its officials have consented to receive all sums sent to it for India Famine Relief, and such sums are being acknowledged in detail in the *Congregationalist*, from week to week. As the Board makes no charge whatever for receiving and forwarding this money, to save expense for postage and clerical assistance, unless specially requested, receipts are not sent to individual donors, as the public acknowledgment in the *Congregationalist* is deemed sufficient.

With the exception of a few dollars paid to the cable company for despatches making the relief more speedily available, every cent of what has been contributed has been forwarded to India, and this money is all being used by a committee of American missionaries for the relief of the famine-stricken—these missionaries, as I understand it, giving their services without charge. In this way all that has been contributed, save what has been paid to the cable company for messages, goes directly to the suffering natives of India.

FRANK H. WIGGIN, Treasurer.

Boston, Mass., April 11.

In regard to the amount that is being subscribed and sent in from America, you have doubtless seen statements in most of the papers. Great sums are being forwarded from all over our land; and so far as I can learn a great deal of the destitution is being relieved. Competent authorities are already doing what I suggested—employing the people to work on canals and reservoirs for furnishing irrigation in order that they may, in a little time, begin to feed themselves. All nations recognize that it is better to set the people at work for moderate pay than to give them supplies or money outright. Heedless giving encourages shiftlessness and pauperism; while setting people at work for regular pay helps them to help themselves. I still think all money had better be sent to the American Board as per the address given in the letter above; but I will undertake to forward it for those who find it inconvenient to send it there, and we will also make public mention of all sums sent, as other periodicals are doing, through our pages.

As we go to press the following sums have been received up to date:

Total sent in previous to this issue, \$33.00.

Amount sent in during the last of April:

Edw. Smith, Carpenter, Ill., \$1.00.
Mrs. Ellis, New Martinsburg, Ohio, \$1.00.
E. Pickup, Limerick, Ill., \$5.00.
Geo F. Leslie, Braeburn, Pa., \$1.30.
W. E. Flower, Ashbourne, Pa., \$1.00.

Please notice the American Board have arrangements so the money can go by cable; therefore it gets to the spot, and helps the starving, almost the very minute you put it in the hands of the American Board.

KANSAS' GIFT OF ONE MILLION BUSHELS OF CORN TO THE STARVING IN INDIA.

The thing is going along, I conclude, from the following which I clip from the *Topeka Daily Press*:

A committee, of which Gov. Stanley is chairman, will meet and arrange for a systematic canvass of the State for funds. Fifteen hundred dollars and a car-load of corn we've pledged at the meeting to-night.

Books for Bee-keepers and Others.

Any of these books on which postage is not given will be forwarded by mail, postpaid on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the book-seller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. We very much desire that those who favor us with their patronage shall not be disappointed and therefore we are going to try to prevent it by mentioning all the faults, so far as we can, that the purchaser may know what he is getting. In the following list, books that we approve we have marked with a *; those we especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice that you can judge of the size of the books very well by the amount required for postage on each.

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

Postage.]	[Price without postage.
8 Bible, good print, neatly bound	20
10 Bunyan's Pilgrim's Progress**	50
Christian's Secret of a Happy Life.* 50c; cloth 1 00	
3 John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*	10
1 Gospel Hymns, consolidated, Nos. 1, 2, 3, and 4, words only; cloth, 10c; paper.....	5
2 Same, board covers	20
5 Same, words and music, small type, board cov.	45
10 Same, words and music, board covers	75
3 New Testament in pretty flexible covers.....	05
5 New Testament, new version, paper covers.....	10
4 Stepping Heavenward*.....	18
5 Tobacco Manual**.....	45

This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy who reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

15 A B C of Bee Culture, cloth.....	1 10
Advanced Bee Culture, by W. Z. Hutchinson	50
3 Amateur Bee-keeper, by J. W. Rouse.....	22
14 Bees and Bee-keeping, by Frank Cheshire, England, Vol. I, §.....	2 36
21 Same, Vol. II, §.....	2 79
Same, Vols. I. and II., postpaid	5 25
10 Bees and Honey, by T. G. Newman.....	90
10 Cook's New Manual, cloth.....	1 15
5 Doolittle on Queen-rearing	95
2 Dzierzon Theory.....	10
3 Foul Brood: Its Natural History and Rational Treatment	22
1 Honey as Food and Medicine	05
15 Langstroth Revised, by Chas. Dadant & Son.....	1 10
15 Quinby's New Bee-keeping.....	1 40
Thirty Years Among the Bees, by H. Alley.....	50
5 Bee-keeping for Profit, by Dr. G. L. Tinker.....	25
5 The Honey-bee, by Thos. William Cowan, British Bee-keeper's Guide-book, by Thomas William Cowan, England §	95
3 Honeybands and His Neighbor, by A. I. Root.....	15
4 Winter Problem in Bee-keeping, by Pierce.....	46
Bienenzucht und Honiggewinnung.....	50
Or "Bee Culture and the Securing of Honey," a German bee-book by J. F. Eggers, of Grand Island, Neb.	
Postage free.	

MISCELLANEOUS HAND-BOOKS.

5 A B C of Carp Culture, by Geo. Finley	25
5 A B C of Strawberry Culture,** by T. B. Terry	35
Probably the leading book of the world on strawberries.	
3 A B C of Potato Culture, Terry*.....	35
This is T. B. Terry's first and most masterly work.	
Barn Plans and Out-buildings*.....	1 50
Canary birds, paper	50
2 Celery for Profit, by T. Greiner**	25
The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once without any assistance except from the book.	
15 Draining for Profit and Health, Warring	1 35
10 Fuller's Grape Culturist**	1 15
8 Domestic Economy, by I. H. Mayer, M. D.* ..	30
This book ought to save at least the money it costs, each year, in every household. It was written by a	

KIND WORDS FOR THE FAULTLESS SPRAYER

I shall have something interesting to write you about the sprayees before long. The (two dozen) little things have saved us hundreds of dollars on our crops this year.

UDO TOEPFERWEIN.

Leon Springs, Tex., April 9.

doctor, and one who has made the matter of domestic economy a life study. The regular price of the book is \$1.00, but by taking a large lot of them we are enabled to make the price only 30 cents.

10 | Farming for Boys*.....1 15

This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

1 | Farming with Green Manures, postpaid*.....90

7 | Farm, Gardening, and Seed-growing*.....90

Fungi and Fungicides, paper, 50c; cloth.....1 00

12 | Gardening for Pleasure, Henderson*.....1 35

12 | Gardening for Profit*.....1 35

8 | Gardening for Young and Old, Harris*.....1 25

This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

3 | Ginseng Culture, by Morris G. Cains.....25

3 | Grasses and Clovers, with Notes on Forage

Plants20

This is by Henry A. Dreer, author of the book, "Vegetables Under Glass" that has had such a large sale of late. This little book tells how six tons of grass has been grown to the acre, and gives much other valuable matter.

10 | Greenhouse construction, by Prof. Taft*.....1 15

This book is of recent publication, and is as full and complete in regard to the building of all glass structures as is the next book in regard to their management. Any one who builds even a small structure for plant-growing under glass will save the value of the book by reading it carefully.

12 | Greenhouse Management, by Prof. Taft*.....1 15

The book is a companion to Greenhouse Construction. It is clear up to the times, contains 400 pages and a great lot of beautiful half-tone engravings. A large part of it is devoted to growing vegetables under glass, especially Grand Rapids lettuce, as well as fruits and flowers. The publisher's price is \$1.50; but as we bought quite a lot of them we can make a special price as above.

5 | Garden and Farm Topics, Henderson*.....60

Gray's School and Field Book of Botany.....1 80

5 | Gregory on Cabbages, paper*.....20

5 | Gregory on Squashes, paper*.....20

5 | Gregory on Onions, paper*.....20

The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

1 | Handbooks for Lumbermen.....05

5 | Home Pork-making; 125 pages, illustrated.....40

I think it will pay well for everybody who keeps a pig to have this book. It tells all about the care of the pig, with lots of pictures describing cheap pens, appliances, all about butchering, the latest and most approved short cuts; all about making the pickle, barreling the meat, fixing a smoke-house (from the cheapest barrel up to the most approved arrangement); all about pig-troughs; how to keep them clean with little labor; recipes for cooking pork in every imaginable way, etc. Publisher's price is 50 cents, ours as above.

10 | Household Conveniences1 40

15 | How to Make the Garden Pay*.....1 35

2 | How to Propagate and Grow Fruit, Green*.....15

2 | Injurious Insects, Cook.....10

10 | Irrigation for the Farm, Garden, and Orchard*1 10

By Stewart. This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills to take the place of rain, during our great drouths, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

7 | Market-gardening and Farm Notes.....75

3 | Maple Sugar and the Sugar-bush*.....32

4 | Peabody's Webster's Dictionary.....10

Over 30,000 words and 250 illustrations.

5 | Manures; How to Make and How to Use

Them; in paper covers.....30

6 | The same in cloth covers.....65

Nut Culturist, postpaid.....1 50

3 | Onions for Profit*.....40

Fully up to the times, and includes both the old onion culture and the new method. The book is fully

illustrated, and written with all the enthusiasm and interest that characterizes its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

1 | Our Farming, by T. B. Terry*.....1 50

In which he tells "how we have made a run-down farm bring both profit and pleasure."

This is a large book, 6x9 inches, 367 pages, quite fully illustrated. It is Terry's first large book; and while it touches on the topics treated in his smaller handbooks, it is sufficiently different so that no one will complain of repetition, even if he has read all of Terry's little books. I should call it the brightest and most practical book on farming, before the world at the present day. The price is \$2.00 postpaid, but we have made arrangements to furnish it for only \$1.50.

If ordered by express or freight with other goods, 10c less.

1 | Poultry for Pleasure and Profit*.....10

8 | Practical Floriculture, Henderson*.....1 10

10 | Profits in Poultry*.....75

1 | Silk and the Silkworm10

10 | Small-Fruit Culturist, Fuller1 10

2 | Sorghum, Stock Beets, Strawberries, and Ce-

ment Floors. By Waldo F. Brown.....08

This little book ought to be worth its cost for what is said on each of the four different subjects; and the chapter on cement floors may be worth many dollars to anybody who has to use cement for floors, walks, or any thing else. In fact, if you follow the exceedingly plain directions you may save several dollars on one single job; and not only that, get a better cement floor than the average mason will make.

10 | Talks on Manures*.....1 35

7 | Ten Acres Enough*.....75

10 | The New Agriculture; or, the Waters Led Cap-

tive (a \$1.50 book)40

11 | The New Egg-Farm, Stoddard*.....70

This is an enlarged edition of the 50-cent book published 25 or 30 years ago by H. H. Stoddard. If I could have only one poultry-book it would be the New Egg-farm. This book is of special value to me because it not only discusses most emphatically the value of exercise to poultry, but it touches on the value of exercise to all other animated nature including humanity. The book has over 300 pages and 150 illustrations. It is entirely different from any other poultry-book in the world, inasmuch as it discusses mechanical contrivances so that all the varied operations of a poultry-farm may be done as much as possible with the aid of machinery. The regular price is \$1.00, but by buying a quantity we are able to furnish it at price given.

2 | Treatise on the Horse and his Diseases.....10

5 | Tile Drainage, by W. I. Chamberlain.....35

Fully illustrated, containing every thing of importance clear up to the present date.

The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in the book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, Ohio.

3 | Tomato Culture35

3 | Vegetables under Glass, by H. A. Dreer*.....20

3 | Vegetables in the Open Air*.....20

This is a sort of companion book to the one above. Both books are most fully illustrated, and are exceedingly valuable, especially at the very low price at which they are sold. The author, H. A. Dreer, has a greenhouse of his own that covers one solid acre, and he is pretty well conversant with all the arrangements and plans for protecting stuff from the weather, and afterward handling to the best advantage when the weather will permit out of doors.

3 | Winter Care of Horses and Cattle.....25

This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in a book. It has 44 pages and 4 cuts.

3 | Wood's Common Objects of the Microscope*.....47

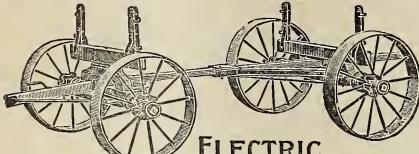
8 | What to Do and How to be Happy While doing

It, by A. I. Root42

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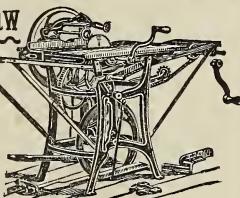
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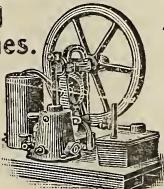
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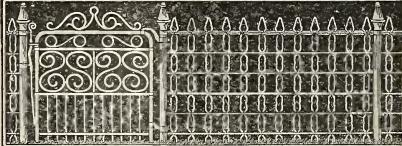
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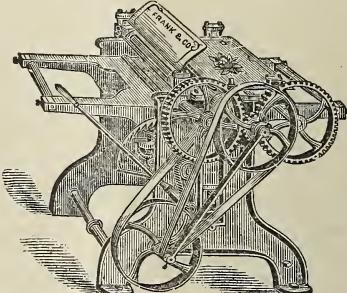
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